REPORT RESUMES

ED 003 484 24

EFFECTIVENESS OF A LANGUAGE ARTS AND BASIC READER APPROACH TO FIRST GRADE READING INSTRUCTION.

BY- STAUFFER, RUSSELL G. HAMMOND, W. DORSEY
DELAWARE UNIV., NEWARK

REPORT NUMBER CRP-2679 PUB DATE 65
EDRS PRICE MF-$0.27 HC-$5.96 149P.

DESCRIPTORS- *LANGUAGE ARTS, *BEGINNING READING, *READING INSTRUCTION, *GRADE 1, READING SKILLS, *READING DEVELOPMENT, VOCABULARY DEVELOPMENT, *BASIC READING, MURPHY DURRELL DIAGNOSTIC READING READINESS TEST, METROPOLITAN READINESS TEST, THURSTONE PATTERN COPYING TEST, NEWARK, DELAWARE, GINN BASIC READER SERIES, BETTS BASIC READERS

A LANGUAGE ARTS APPROACH TO BEGINNING READING INSTRUCTION WAS COMPARED WITH A BASIC READER APPROACH. IN GENERAL, IT WAS CONCLUDED THAT THE LANGUAGE ARTS APPROACH TO BEGINNING READING INSTRUCTION WAS AN EFFECTIVE METHOD. IT PRODUCED EXCELLENT RESULTS IN READING PERFORMANCE, WORD ATTACK SKILLS, SPELLING, VOCABULARY DEVELOPMENT, WRITTEN COMMUNICATION AS PROMOTED BY CREATIVE WRITING, AND IN HANDWRITING. FURTHERMORE, THE TECHNIQUE CAN BE USED EFFECTIVELY WITH ALL CHILDREN. (LP)

EFFECTIVENESS OF A LANGUAGE ARTS AND BASIC READER APPROACH TO FIRST GRADE READING INSTRUCTION

Cooperative Research Project No. 2679

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

Russell G. Stauffer
W. Dorsey Hammond

University of Delaware
Newark, Delaware

1965

The research reported herein was supported by the Cooperative Research Program of the Office of Education, U. S. Department of Health, Education, and Welfare.

ED 003484

ACKNOWLEDGMENTS

Grateful acknowledgment is made to selected University of Delaware personnel whose invaluable assistance made the successful completion of this project a reality.

University officials earn a unique place in each of the studies sponsored under their sanction and they have earned it in this study. I single out Roy M. Hall, Dean of the College of Education as representative and express to him and through him special gratitude.

The project director recognizes the contribution of Dr. Berj Harootunian, Director of the Research and Evaluation Center, in advising and guiding the statistical procedures used in the analysis of data. Funds were provided by the contract to engage Dr. Harootunian's services to give the direction needed in this essential aspect of the study.

Appreciation is expressed to the University of Delaware Computer Center Staff under the direction of Dr. David E. Lamb for their specialized skills and patience in setting up and running the data. A particularly heartfelt thanks to Dr. William Davis of the Computer Center for his understanding and appreciation of the complicating problems presented by the research data at a time when a major computer installation was being accomplished at the University.

Special recognition is given to Dr. G. Ernest Anderson of the University Administrative Staff and Professor of Education who gave freely of his time. His thorough knowledge of computer

science provided us with advice and encouragement which was deeply appreciated.

Sincere thanks is extended to Dr. Edmund H. Henderson of the Reading Study Center for his frequent expressions of encouragement as well as his much welcomed advice.

Sincere thanks is also extended to Dr. Barbara Long formerly of the University of Delaware and now at Goucher College for her review of our statistical procedures and findings.

The interest and assistance of the graduate students of the Reading Study Center who visited the participating classrooms and aided in the testing is gratefully acknowledged.

Thanks is extended to the secretarial staff of the Reading Study Center, Mrs. Josephine Kacena and Mrs. Jane Barr for their able assistance and patience. Particular thanks is extended to Mrs. Betty Cooper, the secretary for this project, whose conscientious work and attention to the smallest detail proved most valuable.

Spouse's always merit an expression of gratitude and they do so in this study. Thank you Hilda Stauffer and Shirley Hammond.

Russell G. Stauffer

TABLE OF CONTENTS

Page

ACKNOWLEDGMENTS i

TABLE OF CONTENTS iii

LIST OF TABLES. iv

CHAPTER

I. PROBLEM. 1

II. OBJECTIVES 2

III. RELATED RESEARCH 5

IV. PROCEDURES 7

  Population 8
  Instructional Procedures 13
  Data Collected 23
  Research Controls. 31

V. ANALYSES OF DATA 37

VI. CONCLUSIONS AND IMPLICATIONS 87

BIBLIOGRAPHY. 108

APPENDIX A: Correlation Matrices 110

APPENDIX B: Means and Standard Deviations of Pretests and Posttests for Boys, Girls, and Total Populations of Experimental and Control Groups. 114

APPENDIX C: Analysis of Covariance 119

APPENDIX D: Tabulated Wrong Responses of a Random Sample Population on the San Diego Reading Attitude Inventory. 124

APPENDIX E: Lists of Tests Used in Study and Copies of Individually Administered Word Recognition Tests, and Instructions for Obtaining the Creative Writing Sample . . 127

APPENDIX F: Schools and School Personnel Cooperating in the Investigation and University of Delaware Graduate Students Majoring in Reading 138

LIST OF TABLES

Table Page

1. Mean Number of Years Teaching Experience and Mean Number of Years Teaching First Grade. 7

2. Highest Academic Degree Held by Teacher 8

3. Means and Test of Significance of Chronological Age of Boys, Girls, and Total Populations of Experimental and Control Groups. 38

4. Means and Test of Significance of Pintner-Cunningham Mental Age Results Expressed in Months for Boys, Girls, and Total Population of Experimental and Control Groups. 39

5. Means and Test of Significance of Reading Readiness as Measured by the Murphy-Durrell Diagnostic Reading Readiness Test for Boys, Girls, and Total Population of Experimental and Control Groups. 41

6. Means and Test of Significance of Readiness as Measured by the Metropolitan Readiness Test for Boys, Girls, and Total Population of Experimental and Control Groups. 42

7. Means and Test of Significance of Thurstone Pattern Copying Test for Boys, Girls, and Total Population of Experimental and Control Groups 44

8. Means and Test of Significance of Thurstone and Jeffrey Identical Forms Test for Boys, Girls, and Total Population of Experimental and Control Groups . . . 45

9. A List of the Number of Words Known by Selected Children in the Experimental Population and the Control Population on the Detroit Word Learning Test. . . 46

10. Means and Test of Significance of Stanford Achievement Test, Primary I, Form X, for Boys, Girls, and Total Population of Experimental and Control Groups. 49

11. Means and Test of Significance of Attitudes Toward Reading as Measured by the San Diego Reading Attitude Inventory for Boys, Girls, and Total Population of Experimental and Control Groups 53

12. Means and Test of Significance of Oral Reading Performance as Measured by the Gilmore Oral Reading Test 54

13. Means and Test of Significance of Word Recognition Ability as Measured by Fry Phonetically Regular Words Oral Reading Test. 55

14. Means and Test of Significance of Word Recognition Ability as Measured by the Karlsen Phonemic Word Test. 56

15. Means and Test of Significance of Word Recognition Ability as Measured by the Gates Word Pronunciation Test 56

16. Means and Test of Significance of Writing Mechanics as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population. . . . 59

17. Means and Test of Significance of Total Number of Words Spelled Correctly in the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population. 60

18. Means and Test of Significance of Total Number of Running Words as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population. 60

19. Means and Test of Significance of Number of Different Words Spelled Correctly as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population 62

20. Means and Test of Significance of Number of Different Words Used as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population. 63

21. Means and Test of Significance on Originality and Interest on Grade One Written Language Measure Restricted Stimulus on a Random Sample Population. . . . 65

22. Means and Test of Significance of Story Consistency on Grade One Written Language Measure Restricted Stimulus on a Random Sample Population 66

23. Means, with Records on Tests of Significance Between the Experimental and Control Population Indicating the Influence of Much Kindergarten Experience, Limited Experience, and No Experience. 74

24. Means and Analysis of Reading Achievement as Measured by the Stanford Achievement Test, Primary I Battery, Form X, between the two treatment groups when the pupils are regrouped much like the Terman Classification of Intelligence 78

25. Means and Tests of Significance of Reading Achievement as Measured by the Stanford Achievement Test, Primary I Battery, Form X for the Experimental Population Minus the Negro Population and the Total Control Population. . . 80

26. Percentile Rank and Stanine Scale Comparison of the Two Populations with the National Sample 83

27. Percentile Rank and Stanine Scale Comparison of the Two Populations With the National Sample 84

CHAPTER I

PROBLEM

The purpose of this study was to test the hypothesis that there is no difference between the effects of two methods of beginning reading instruction to first grade level children. The two methods compared were the Language Arts Approach and a Basic Reader Approach.

The Language Arts or Language-Experience Approach utilized children's oral language facility and experiences and their creative writing facility to develop a reading vocabulary and word attack skills. In addition, group type reading instruction using the library as a principal source of materials as well as basic readers were used. The Basic Reader Approach utilized basic readers, skillbooks, and teacher's manuals designed to develop and maintain a reading vocabulary, word attack skills, and comprehension.

CHAPTER II

OBJECTIVES

The general objective of this study was to determine the effects of two methods of beginning reading instruction on first grade children. The hypothesis was stated as: There is no significant difference between the effects and outcomes of the language arts approach and the basic reader approach when applied at the first grade level; and, there is no significant difference between the effects of the two approaches when the two populations are compared on the basis of sex.

The following specific questions were posed:

(1) Will there be a significant difference between the performance of the two treatment groups as measured by the Stanford Achievement Test?

(2) Will there be a significant difference between the performance of the boys and the girls of the two treatment groups as measured by the Stanford Achievement Test?

(3) Will there be a significant difference in attitude toward reading between the two treatment groups?

(4) Will there be a significant difference between the oral reading performance of a random sample population from the two treatment groups?

(5) Will there be a significant difference between the word recognition ability of a random sample population from the two treatment groups?

(6) Will there be a significant difference in writing mechanics, spelling, and total number of running words between a random sample population of the two treatment groups on a measure of written language?

(7) Will there be a significant difference in the number of words spelled correctly, in the different words used, in originality, interest, and story consistency between a random sample population of the two treatment groups on a written language measure?

(8) Will there be a significant difference in reading achievement between the two treatment groups when readiness test results and intelligence test results are held constant?

(9) Will there be any pretest measures that will be the best predictors of achievement?

(10) Will there be a significant difference in reading achievement between the two treatment groups as influenced by kindergarten experience?

(11) Will there be a significant difference in achievement between the two treatment groups when the pupils are regrouped according to the Terman classifications of intelligence?

(12) Will there be a significant difference in achievement between the two treatment groups when the segregated negro children are removed from the Experimental population?

(13) Will there be a significant difference in achievement as measured by the Stanford Achievement Test when both treatment groups are compared with a National Sample?

(14) Will there be a significant difference in achievement as measured by the Stanford Achievement Test when the Experimental population has removed from it the segregated negro population and this group along with the Control population is compared with a National Sample?

CHAPTER III

RELATED RESEARCH

Studies in reading specifically directed toward discovering a best approach to beginning reading instruction were initiated in the 1930's. In 1963, Chall,[1] principal investigator of the City College-Carnegie Reading Study, reported some preliminary impressions and evaluations of the thousands of existent beginning reading research projects. Chall maintained that there were practically no comparative methods studies that would meet strict experimental criteria.

In view of the limited valid experimental literature that is related to beginning reading methods, three significant longitudinal studies were selected to provide the conceptual framework for this project. Included among these studies directly related to the proposed methods are those of Roach Van Allen, Ruth Strickland, and Walter Loban.

At the close of a five year investigation, Van Allen[2] reported his findings when children were taught by means of a basic reader approach, an individualized reading approach, and a language-experience approach. Pupils who were taught through the language-experience approach made as much or more progress in reading as measured by standardized tests than did children taught through individualized reading and basic reader approaches. The study included children representing a typical distribution of mental abilities.

---

[1] Jeanne Chall, "Different Approaches to Beginning Reading," *Reading as an Intellectual Activity*, (J. Allen Figurel, Ed.). Newark, Delaware: The International Reading Association, 1963, pp. 250-254.

[2] Roach Van Allen, *A Description of Three Approaches to the Teaching of Reading*, Monograph No. 2. San Diego, California: Department of Education, San Diego County, 1962.

The adequacy of basal materials in teaching reading was investigated by Strickland.[3] A comparative analysis was made between the oral language patterns of 575 pupils in grades 1 - 6 and language patterns found in basic readers. Strickland concluded that pupils' oral language patterns are much more varied than patterns found in basic readers even though some congruence between speech patterns and reading materials is desirable. The language arts or language-experience approach does lend itself to the desired congruence.

Loban[4] investigated the language patterns of 338 children of varied racial backgrounds, intellectual ability and socio-economic levels. Pupils' language development was studied from kindergarten through grade twelve. After seven years of the study were completed, Loban concluded that language proficiency may be culturally as well as individually determined. In addition, he maintained that pupils' competence in aural-oral language was basic to competence in reading and writing.

---

[3] Ruth G. Strickland, The Language of Elementary School Children: Its Relationship to the Language of Reading Textbooks and the Quality of Reading of Selected Children, Bulletin of the School of Education, Bloomington: Indiana University, 1962.

[4] Walter D. Loban, The Language of Elementary School Children, Research Report No. 1. Champaign, Illinois: National Council of Teachers of English, 1964.

CHAPTER IV

PROCEDURES

The sample was comprised of 20 first grade classrooms in three towns in southern Delaware. Ten classrooms used the Language Arts Approach to beginning reading. Ten classrooms used the Basic Reader Approach.

There were 528 subjects used in this study. All children were at least 5 years 8 months of age on September 1, 1964. Of the 528 subjects only 433 received full pretest and posttest analysis. This difference was attributable to absenteeism and population mobility.

In the Experimental population there was a total of 232 subjects. Of this total 119 were boys and 113 were girls. This included 27 boys and 44 girls in the segregated negro population. In the Control population there was a total of 201 subjects: 117 boys and 84 girls.

Teacher Population: There were 10 teachers in each of the two treatment groups. All teachers were women. Each teacher completed the school year with the class assigned to her in September, 1964. Teachers in both treatment groups represented considerable teaching experience.

Table 1

Mean Number of Years Teaching Experience

and Mean Number of Years Teaching First Grade

	Number of Years Teaching Experience	Number of Years Teaching First Grade
Experimental	22	18
Control	17	12

The range of teaching experience for the Experimental Group was from 2 - 40 years. The one teacher with two years of teaching experience was teaching her first year in a first grade classroom.

The range of teaching experience for the Control Group was from 5 - 31 years. One teacher in the Control Group was teaching in first grade for the first time.

Table 2

Highest Academic Degree Held by Teacher

Description of Degree	Experimental Teachers	Control Teachers
Less than Bachelor's Degree	0	1
Bachelor's Degree	6	8
More than Bachelor's but less than Master's	2	0
Master's Degree	2	1
Master's Degree plus additional graduate work	0	0

All but one of the 20 teachers held Bachelor's Degrees. Five had done additional work beyond a Bachelor's Degree with two earning a Master's Degree. The one teacher having less than a Bachelor's Degree was lacking six credits for a B.S. Degree in Elementary Education. She was an experienced teacher however. All teachers held standard certificates as specified by the Department of Public Instruction, State of Delaware.

The mean age of the teachers in the Control population was 46.3 years and the Experimental population 43.8 years. The youngest teacher was 25 years of age, the oldest was 60 years of age.

Population Description: The Experimental Group was located in the Seaford Special School District. The town of Seaford is in a rural setting with a population of approximately 8,000. The chief occupations are agriculture and the production of nylon and other synthetic materials at a local duPont industrial plant. The median family income based on the 1960 census was $6,459 for the total population. The median family income for the non-white population was $2,957. The median educational level for the total population was 12.1 years. The median educational level for the non-white population was 7.3 years.

The Control classes were located in the Georgetown and Harrington Special School Districts. Georgetown is the county seat of Sussex County. It is a town of approximately 2,500 people, located about 20 miles east of Seaford. The main sources of income are agriculture, positions in county government and employment at the duPont Nylon plant in Seaford. The median income level based on the 1960 census for Sussex County was $5,585. The median educational level was 10.1 years. There were no non-white children attending the Georgetown school in which this research was conducted.

Harrington is a small town in a rural setting with a population of approximately 3,000 people located about 20 miles south of Dover, the State Capitol, and about 20 miles north of Seaford. Many Harrington residents are employed by different departments in the state government. Two other sources of income are agriculture and employment at the duPont Nylon plant at Seaford. The median income level based on the 1960 census for Kent County was $5,391. The median education level was 10.7 years. There were no non-white attending the Harrington school where this research was conducted.

Each town is within 20 miles distance of either of the other towns. Harrington lying north of Seaford and Georgetown is just across the county line in Kent County.

In Seaford, the location of the Experimental population, all first grade classrooms or a total of 10 were used as a part of the study. To equal this total, five classrooms in Georgetown and five in Harrington were selected.

Private kindergartens were available to all the children in the study. In Seaford and Georgetown the kindergartens were located in the communities. Harrington children, however, needed to attend kindergartens in neighboring communities. The Georgetown kindergarten was church supported. The one in Seaford was privately supported. Delaware does not provide state supported kindergartens. The major purpose of each kindergarten referred to here was to provide readiness experiences for enrollment in first grade.

Sample Modification: There occurred in the summer of 1964 a problem which was to ultimately affect a portion of the sample used in the study. The proposal was originally drawn to consist of five first grade classrooms from each of four communities. The Experimental Group using the language arts approach was to be five first grade classrooms of Seaford

Special School District of Seaford, Delaware, and five first grade classrooms of the Smyrna Special School District of Smyrna, Delaware. The Control Group using the basic reader approach consisted of the five first grade classrooms of the Georgetown and the Harrington schools respectively. The Smyrna Special School District experienced a change in the chief school officer during the summer months. As a result the new school officer notified the project director that he felt that research in the Smyrna schools would be neither feasible nor desirable at that time.

Under such conditions it was necessary for another sample population to be identified. The Seaford schools and the Smyrna schools had been invited to participate in the study because in both districts there were located certain teachers who had displayed some competence with the use of a language-experience approach. This competence had resulted from consultation work done in both districts by the director of this research. Since not all the teachers in each district were equally efficient in the use of the language-experience approach it was thought that by selecting five teachers in each district this would to some degree off-set the advantage of years of experience of the Control teachers in the use of a basal series of readers.

Now that it was necessary to identify teachers to replace the Smyrna people and to do so in late August it was thought most feasible to try to enlist for participation all of the ten teachers in Seaford, Delaware. This proposal was reviewed with the appropriate representative in the United States Office of Education and approval was obtained. Accordingly, Dr. K. Madden, Superintendent of the Seaford School District was approached. Circumstances were explained to him and his reactions were sought to the new proposal. He reacted favorably to the idea and agreed to take action needed in contacting the Seaford teachers for their approval.

This new location of the Experimental population resulted in two changes. It was felt that since all of the first grade teachers were involved this would now in part off-set the Hawthorne effect. Not all ten teachers were equally enthusiastic about the study or equally competent with the language-experience approach. In addition, by using all of the first grade classrooms, there were now involved as part of the study two classrooms in a total segregated school of negro children. This brought into play certain social, cultural, and economic factors as well as language-experience factors commonly associated with totally segregated schools. It was thought though that this too was a desirable modification of the original proposal since the results might yield recommendations that would otherwise not have been obtained. It must be noted though that one of the two other elementary schools consisted of a partially integrated population at the first grade level. On the other hand, the populations in the Control schools represented only segregated white children.

INSTRUCTIONAL PROCEDURES

The following account of the Language Arts Approach appeared in Appendix A of Project No. 2679 the proposal submitted to the U. S. Office of Education.

Ten of the classrooms will use a Language Arts Approach hereafter referred to as LAA. Pupils in the LAA population will be introduced to reading instruction by means of pupil-dictated experience stories. Both group-dictated and individual-dictate stories are to be obtained and used. Words recognized and remembered in the experience stories at a minimum of one day recall are placed in a pupil's wordbank. Books, papers, and periodicals are to be placed on a library corner table and bookshelf so that words learned in experience stories may be identified in other sources. The words in the wordbank are to be used by the pupils to set up an alphabetical bank file; to arrange the words in phrases, sentences, and/or stories on their desk tops; and to develop and refine word attack skills. Special attention is to be given to both auditory discrimination skill and visual-auditory discrimination.

As pupil facility in recognizing words increases, individually-dictated experience stories may be exchanged among pupils. This provides an early opportunity for pupils to read stories written by an author other than themselves.

When the pupils' reading vocabulary has increased to the point where basic reader pre-primers or trade books of a similar level of difficulty can be read independently, then such materials are to be supplied. This gradual turning to books may set at an early time the attitude and habit of wide reading and is to lead directly to the individualized directed reading-thinking activities with the library as the source of material.

Also, as writing facility is acquired as well as reading facility pupils are to be encouraged to write their own creatively designed stories. Pupils are to be encouraged to spell as best they can the words they wish to use and are to be supplied with correct spellings only if they ask for such help. Emphasis in creative writing is to be on the recording and communicating of ideas.

When a sufficient reading vocabulary has been acquired to permit the use of basic readers of either a primer level or first reader level difficulty, then group directed reading-thinking activities are to be introduced. Now the reading instructional time is to be equally divided between individualized reading instruction and group reading instruction.

In the group directed reading-thinking activities, emphasis is to be placed on pupil purpose setting, reading to find answers to support or reject pupil conjectures, oral reading to prove answers, and problem or plot solving type reading.

Words introduced as new in a basic reader are not to be taught in advance of the reading of a group directed basic reading story. Pupils are to be given an opportunity to use the word attack skills they have learned in the basic reader material in which vocabulary controls have already been exercised by the authors.

In the initial phases of the LAA the materials to be used consist primarily of paper of various sizes, crayons, felt-tipped pens, paints, and pens and pencils.

For group-type dictated stories newsprint will best serve the recording purposes. The newsprint is mounted on an easel. Recording is done by means of either a black crayola or a felt-tipped pen.

For individually-dictated stories, 11x15 size lined paper may be used. Again crayola, a felt-tipped pen, or a pencil with a number one (1) lead may be used for recording. In addition, a primer type size typewriter will be used along with an appropriate quality bond paper. Carbon paper will be needed to prepare extra copies of a dictated story.

Art materials (paper, paints, crayons, easels) need to be supplied so that children may illustrate their stories. Individual illustrations as well as group murals or the like may be obtained. Illustrations may reflect a story general theme, or a story character, or a story episode, or an unusual concept, and the like.

Holders for mounting the stories may be needed. Newspaper holders of the type used in libraries are a good means for mounting group stories recorded on newsprint. Clothes hangers commonly used by women as skirt hangers are a good means of posting individual stories.

Each child will need a notebook in which he may mount his own and his classmates' dictated stories. In the notebook may be kept a list of words known as a vocabulary list or the equivalent of a pupil-prepared picture dictionary.

Trade books, children's and adults' magazines, and newspapers need to be made available as well as basic readers and other similar curriculum materials.

Where available opaque or overhead projectors may be used to project a dictated story, a piece of creative writing, or a pupil-prepared illustration.

Both group and individual experience stories are to be obtained. As soon as possible, and as feasible, individually-dictated stories are to be obtained. Each pupil is to dictate at least two stories each week. Tape recordings are to be obtained at four intervals throughout the year: September, November, January, and May.

Each pupil will maintain an individual wordbank, make his own picture dictionary, keep a log book of his own stories and those stories of his classmates that he selects, do much of his own illustrating, find words he has learned in trade books and/or periodicals, or newspapers.

Creative writing is also practiced on an individual basis and records are kept. These may be studied in detail at a subsequent time for language segmentation and the functions of communication units and the classification of style.

The exchange of dictated stories, of stories structured by means of the wordbank cards, by creative writing lead to team and small group learning and sharing. Words from the wordbank may be used by teams of pupils or small groups for auditory discrimination and visual-auditory discrimination practice.

Joined activities such as result when creative dramatics or puppet shows are prepared and/or staged may also produce opportunities for individual and group instruction. These oral language ventures should influence the quality and quantity of pupils' dictated experience stories.

When group instruction in basic readers is initiated, then, individualized reading activities are also practiced using the library as source material.

In the LAA classroom much enrichment should result from the extensive use of a pupil's oral language resources. His spoken language facility, along with his experiences and knowledge, will supply the wherewithal for the dictated stories as well as the creatively written stories. The dramatizations, plays, puppet shows, monologues will add variety and prime the reading of the experiences. Maintaining pupil records of words learned, an alphabetized vocabulary list, books read or consulted, and ideas shared will add variance. Group directed reading of basic reader stories will provide still another source of stimulation. Keeping records and writing stories will provide much written language practice including spelling. Keeping the tape recordings is another source of variety as will be the varied ways of illustrating experience stories or sharing ideas gained as a result of the individualized reading sessions. The use of the library is of major importance.

Time Schedule for Classroom Reading Program:

	Average Minutes Daily	
	LAA	BRA
MORNING		
Show and Tell Session Greetings, talks, songs, planning for day.	20	20
Reading Instruction	40	40
Language Arts Development	30	30
Word Attack Skill Training	10	10
AFTERNOON		
Reading Instruction	30	30
Word Attack Skill Training	10	10
Oral Language Development	20	20

LAA Dictation Schedule

	Mon.	Tues.	Wed.	Thurs.	Fri.
Group I	dictate story	reread story word study	reread story word study	dictate story	reread story word study
Group II	rereading and illustrating	dictate story	reread story word study	reread story word study	dictate story
Group III	rereading and illustrating	dictate story	reread story word study	other related activities	dictate story
Group IV	dictate story	reread story word study	other related activities	dictate story	reread story word study

The account provided thus far of the Language Arts Approach represents quite accurately the methodology used in the first grade classrooms in the Seaford Special School District. Each of the ten teachers showed a considerable amount of teacher ingenuity in adopting the procedures recommended. Some showed special facility in promoting creative writing. Some performed best in the use of individualized reading practices. It was heartening to see the amount of teacher creativity that resulted in each of the classrooms. The weekly visits by the director of the project and his assistant and by the reading consultant in the Seaford Special School District helped influence teacher adjustment and creativity.

One notable exception occurred. The Seaford Special School District made available a part-time secretary. She visited each of the first grade classrooms on a schedule that permitted two visits per week. It was originally intended that she might help the teachers keep the children's wordbanks up-to-date and to type dictated experience stories that could be mounted in the booklets available. However, the secretary provided was so capable a person that in a short time the children were working directly with her. They would gather around her to dictate experience stories, to get additional copies of a friend's stories, to add to their word lists and on occasion to get a typed copy of a story done by creative writing.

Central library facilities were available in each of the schools. A part-time librarian was available in each. In the Frederick Douglass School the library facilities were shared with Junior High School students. The number of library books suitable for elementary students met the American Library Association minimum standards of ten per pupil.

In each of the three schools the first grade children made regularly scheduled visits to the library. When children reached first reader level reading ability more frequent library visits occurred and on occasion individual pupils were permitted to go to the library on their own.

In addition each classroom had a selected number of books readily available in a classroom library. A constant turnover between the classroom library and the central library occurred.[5]

The Control Groups followed a *Basic Reader* plan of beginning reading instruction. Though different Basic Reader series may vary in their emphasis on particular aspects of beginning reading, the following procedure is indicative of the Basic Reader Approach.

In the Basic Reader Approach the initial sight vocabulary is learned through the use of pre-primers and primers. Learning takes place through the constant repetition of a controlled number of words. There is a heavy reliance on skillbook activities. The Basic Reader program is structured in terms of grade levels and book levels. Stated objectives of the Basic Reader programs used in the Georgetown and Harrington populations were: (1) to promote reading for comprehension, (2) to acquire facility in word study skills including word meaning, word recognition, phonics, instructional analysis, and, (3) promoting good reading habits and attitudes.

---

[5] Russell G. Stauffer. "A Language Experience Approach." *Perspectives in Reading No. 5, First Grade Reading Programs.* (James F. Kerfoot, Compl. and Ed.) Newark, Delaware: International Reading Association, 1965. pp. 86-117.

The series used in the Harrington District is the American Book Series[6] and in the Georgetown District the Ginn Basic Reader Series.[7] The American Book Series offers an optional approach to beginning reading by suggesting the use of experience stories. This option as in past years was not taken by the Harrington teachers.

Central library facilities were available in each of the two schools where the Control classes were located. However, in each school the library facilities were shared with secondary school students. The number of library books suitable for elementary students met the minimum American Library Association standards.

In each school children in the first grade classrooms did not make regularly scheduled visits to the library. First grade classes visited the central library occasionally during the school year. Each classroom in the Control Group had a small number of books that were available for children to examine and read. This small supply of books in each classroom was supplemented by trade books from the central library. Individual classroom teachers selected books from the central library for classroom use. Books were traded among classes or returned to the library to be exchanged for a new supply of reading material. This procedure in the Control Group resulted in the classroom libraries acting as the chief source for material used for wide reading.

---

[6] Emmett A. Betts and Carolyn M. Welch, Betts Basic Readers, Third Edition, The Language Arts Series. American Book Company, New York, 1963.

[7] David H. Russell et al. The Ginn Basic Readers, Ginn and Company, Boston, 1961.

DATA COLLECTED

Pretests: In September of the experimental year each subject in the two treatment groups was administered the Metropolitan Readiness Test, Form A, the Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition, the Pintner-Cunningham Primary Test of Mental Ability, Form A, Revised, 1964. The Thurstone Pattern Copying, Experimental Edition, and the Thurstone and Jeffrey Identical Forms, Experimental Edition. The Detroit Word Recognition Test was administered individually to those students who were reading when they entered school. Students for the Detroit Test were identified by the respective classroom teachers.

The Metropolitan Readiness Test is a standardized test administered on a group basis. The test purports to measure the traits and achievements of beginning school children as to their readiness for first grade instruction. It includes the following subtests: Word Meaning, Listening, Matching, Alphabet, Numbers, and Copying. In each test, the pupils mark or copy pictures according to the examiner's oral instruction.

The Word Meaning test was composed of 16 items. Each item contained three pictures from which a child chose the one best fitted to the meaning of the word read orally by the examiner. The Listening test contained 16 items designed to measure a child's comprehension of sentences. From three pictures a child selected the appropriate one to illustrate the sentence read orally by the examiner. The Matching test was a 14 item test of visual perception involving the recognition of similarity of words and geometric figures. A pupil marks one of three pictures which matches a given picture. The Alphabet test was a 16 item test of ability to recognize lower-case letters of the alphabet. A pupil chooses a letter from among four alternatives in response to the naming of a letter by the test administrator. The Numbers test was a 26 item test of number knowledge and number concepts. The Copying test was a 14 item test which measured a combination of visual perception and motor control. Pupils were asked to replicate letters and geometric figures.

The Murphy-Durrell Diagnostic Reading Readiness Test is designed to measure what the authors consider to be three critical areas in learning to read; auditory discrimination, visual discrimination, and learning rate. Pupils are asked to identify phonemes in spoken words, capital and lower case letters by name and sight and learn words so that a rate of word learning may be determined. The test is divided into three sections and is administered on a group basis.

The Pintner-Cunningham Primary Test of Mental Ability is a group intelligence test which measures the pupil's ability to make common observations and aesthetic comparisons, associate objects, discriminate sizes, identify picture parts, complete picture objects, and replicate designs by means of dot drawings. Each section of the test is timed. Pupils receive oral instructions from the instructor on each section of the test.

The Thurstone Pattern Copying test consisted of 36 items of either geometric or letter forms which were to be replicated by the pupil. Pupils were encouraged to attempt each item. The Identical Forms test consisted of 40 items involving the matching of one form out of five with the first form presented. This was a timed test. Pupils were allowed three minutes on this test.

The Detroit Word Recognition Test is administered on a group basis. A pupil matches words and phrases to appropriate pictures on each of four pages. The reading difficulty of the words or phrases and the content of the accompanying pictures increase in difficulty and complexity as successive pages are dealt with. Pupils are given four minutes to complete the 40 item test.

Posttests: The following instruments to measure achievement were administered between April and May, and in the following order: San Diego Reading Attitude Inventory, Stanford Achievement Test, Primary I, Form X, 1964, the Gilmore Oral Reading Test, Fry Test of Phonetically Regular Words Oral Reading Test, Gates Word Pronunciation Test, and the Karlsen Phonemic Word Test. In addition a Creative Writing Sample was obtained from each child.

The San Diego Reading Attitude Inventory and the Stanford Achievement Test was administered to each child in the study. The Gilmore, Fry, Gates, and Karlsen Tests were administered to a randomly selected population. Even though creative writing samples were obtained from all the children of both populations only the writings of those pupils identified for the randomly selected population were analysed and compared.

The posttests were not administered until after 140 teaching days had been accomplished. Final testing started the week in which the 140th teaching day occurred.

The San Diego Reading Attitude Inventory is a questionnaire read orally by the examiner. The pupil circles a Yes or No response to each of 25 questions designed to measure what he usually thinks about reading.

The Stanford Achievement Test was made up of six subtests: Word Reading, Paragraph Meaning, Vocabulary, Spelling, Word Study Skills, and Arithmetic.

The Word Reading subtest consisted of 35 items, each of which contained four words. The pupils were required to choose the correct word which matched an accompanying picture.

The Paragraph Meaning subtest was composed of 38 paragraphs of increasing difficulty designed to test a pupil's comprehension. Paragraph length ranged from one to six sentences. One or more words was omitted in each paragraph. The pupil was required to select the correct word or words to complete the paragraph.

The Vocabulary subtest was designed to measure vocabulary independent of reading ability. The pupil was required to select from a series of three alternatives the proper answer to a question or statement read by the examiner. All items including the alternatives were read by the examiner.

The Spelling subtest of 20 words was dictated by the examiner. The word was pronounced in isolation, used in an illustrative sentence, and read again. Then the pupil was asked to write the word.

The Word Study Skills subtest was a 56 item test divided into four sections. The four 14 item sections dealt with determining beginning sounds, detecting similar ending sounds, matching a word heard with one of three that was read, and distinguishing rhyming words.

The Arithmetic subtest consisted of a 63 item test designed to the pupil's awareness of Measures, his Problem Solving ability, and his concept of Numbers.

A random sample of subjects in each treatment group were individually administered the Gilmore Oral Reading Test, the Karlsen Phonemic Word Test, the Gates Word Pronunciation Test, and the Fry Phonetically Regular Words Oral Reading Test. Forty-four subjects from each treatment group were originally selected by a table of random numbers. Students who had not had the complete battery of pretests and posttests were eliminated from sample. The population was reduced to 35 pupils for each treatment group.

The Gilmore Oral Reading Test is an individually administered test of oral reading performance designed for use in grades one through eight. The test provides measures of accuracy of oral reading, comprehension of material read, and rate of oral reading. Only the accuracy of oral reading and rate of oral reading is reported in this study. Accuracy of oral reading is measured by recording such errors as substitutions, mispronunciations, inability to recognize words, disregarding of punctuation, insertions and additions, hesitations, repetitions, and omissions during the oral reading performance.

Rate of oral reading is measured by the time required to read orally selected paragraphs. Rate is computed on a wpm (words per minute) basis.

The test consists of 10 paragraphs of increasing difficulty which form a continuous story. However each paragraph is a unified and self-sufficient narrative and is related to the other paragraphs by its concern with the same characters. Each paragraph is accompanied by five comprehension questions. The examiner presents the paragraphs in numerical order until the pupil reaches the paragraph on which he makes 10 or more errors in his oral reading.

The Karlsen Phonemic Word Test is a list of 40 words in isolation apparently ranged in increasing difficulty. The pupil is asked to read the words out loud and continues to read until five consecutive words are missed. The score is the number of words pronounced correctly.

The Phonetically Regular Words Oral Reading Test is a list of 30 words arranged in two columns of 15 words each. Each pupil attempts the first column of 15 words. If two or more words are recognized from word number six on, the student attempts the second column. The score is the number of words pronounced correctly.

The Gates Word Pronunciation Test is a list of words ranged in order of increasing difficulty. The pupil reads the words until 10 consecutive words have been missed. The pupil is given one point for a correctly pronounced word on the first trial and one-half point for each word correctly pronounced on a second trial.

In addition two writing samples from each pupil of the total population were obtained. The first sample was considered a Restricted Stimulus Measure. No attempt was made to enrich normal classroom display. Teachers spent a minimum amount of time motivating the class to write their story. No specific stimuli such as suggested titles, pictures, etc. were presented. Twenty minutes were allowed for the pupils to write their story. No spelling help was provided during the writing period. When pupils requested spelling assistance they were told to try to spell the words as best they could. If pupils normally used a simplified dictionary, wrote from displayed flashcards or used a speller, such practices were allowed. Such aids used during the writing period were noted by the classroom teacher.

The stories from the random sample of the Restricted Stimulus Measure were corrected by two graduate students majoring in Reading at the University of Delaware.

A Mechanics Ratio Scale was obtained for each restricted stimulus story in the random sample. The Mechanics Ratio Scale measured the correct use of capitalization, punctuation, and paragraph indentations. The score was a percentage of correct usage over possible correct usage.

The Total Number of Words Spelled Correctly was recorded. To obtain this score, the number of words misspelled was subtracted from the total number of running words. A word incorrectly capitalized was recorded as a spelling error. The Total Number of Running Words for each story was also recorded.

In addition, the Total Number of Different Words used in the story and the Total Number of Different Words Spelled Correctly was recorded.

Three additional unique measures were obtained from the written samples. Each written sample was judged as to degree of creativity or originality and interest. The stories were also judged as to their organizational structure. The analysis of Originality, Interest, and Organization was made by the two graduate students previously mentioned.

In evaluating the creative stories, the raters did not know from which population the stories were drawn thus eliminating any possible bias.

RESEARCH CONTROLS

Preschool planning sessions were held in September. On Thursday, September 2nd, a joint meeting of all the participants directly involved in the study was held at the Harrington school. In attendance were the project director, research assistant, the reading consultant of the experimental schools, the principals of the participating schools, and the 20 classroom teachers. During the morning session, the project director reviewed the research proposal which was to be conducted during the school year. The other 26 co-ordinated proposals were also reviewed briefly. Pretesting procedure was outlined for the month of September. A question period followed.

During the second session, that morning the project director met with the language arts personnel and the research assistant met with the basic reader participants. The research assistant reviewed the procedures found in the basic reader manuals which were being used by the Control schools. Readiness material used and study book material was discussed as it was co-ordinated within the basic reader approach. A question period followed. Because the research assistant and the basic reader teachers felt satisfied with their examination of the basic reader approach, the Control teachers adjourned after a joint luncheon session. The project director, meeting with the language-experience teachers began an examination and review of the specific steps necessary in a language-experience approach to beginning reading.

The project director reviewed the procedure for obtaining dictated experience stories. The use of group stories as a beginning procedure was discussed. The process by which individual stories was obtained was reviewed. The project director suggested numerous approaches for the motivation and stimulation of children in order for them to dictate stories. Class organization was discussed and a four-group plan within the classroom was recommended. The procedure by which these groups could alternate in getting dictated stories, the reading of the stories, obtaining word card and related activities was reviewed also.

In addition a program for word recognition skill training was reviewed. The importance of auditory and auditory-visual discrimination was stressed strongly. Wordbanks and how they might be most efficiently used was reviewed. The project director stressed the importance of the library as an integral part of the language arts program. Procedures for introducing children to the use of the library were discussed. The project director reviewed the way in which activities in other subject areas such as science, arithmetic and social studies could be integrated with the reading program. Handwriting skills was discussed and it was concluded that the teachers would use the approaches to teaching handwriting that they had used in previous years or to use the guide as defined in American English[8]. That the children would be given every opportunity to use their handwriting skill in their creative writing was also discussed. Diagnostic procedures useful in recognizing individual differences of the children were called to the teachers' attention. Because the teachers using the language-experience approach were following a less structered program without commercially produced manuals or directions, it took two days to present the ideas described above.

---

[8] Alvina T. Burrows, R. G. Stauffer, et al. American English. New York: John C. Winston, Division of Holt, Rinehart and Winston, Inc. 1960.

Frequent visitations were made by the project director and the project assistant to the schools and classrooms participating in the study. The project director visited the Experimental classrooms on an average of two times a week up to and through the month of December. Weekly visits were made thereafter until posttesting had been completed. The project director visited the Control classrooms at least once a month during the school year. The research control assistant visited the Experimental classrooms three times weekly through December and twice weekly until the termination of the project. The research control assistant visited the Control schools approximately once a week through December and bi-weekly through April. In addition to these visits both the project director and assistant were present daily for approximately two weeks in September during the pretest sessions and in April during the posttest sessions. The Seaford Special School District's Reading Consultant visited with each teacher in the Experimental treatment group at least once a week throughout the school year. This was a larger number of visits to first grades by the reading consultant than was typical of other years.

In each school the principal also made periodic visits. The two principals in the Control schools were urged to make frequent visits to note adjustment and progress and to give advice if requested. In turn, the principals would alert the director and/or assistant as to circumstances. Usually the director and/or assistant had lunch with the principal so that the project and its progress could be reviewed. On occasions the project director and/or assistant had an opportunity to meet with the superintendent of the respective school districts and review progress of the proposal.

On March 17th, Dr. Guy Bond, University of Minnesota, Co-ordinator of the 27 research studies visited in each classroom. A carefully planned schedule permitted him to visit personally with each teacher. These visits ranged in length from 5 to 20 minutes. In almost every instance he visited the classroom privately so that he might observe without being influenced by the project director or his assistant and so that he could talk privately with the participating teacher.

The cooperation of the school administrative staff in each instance was outstanding. The superintendents should be singled out for a special word of commendation. Not only did they wholeheartedly voice support for this study but also they made frequent inquiries and visits. The principals merit special high praise. They were constantly and intimately involved and gave unquestioning support.

The teachers in the Experimental Group met with the director and the assistant for a period of one to two hours one day per week at the end of a regular school day. This method of meeting was used throughout the month of October. Thereafter either the director or his assistant met with the first grade teachers in a school during the lunch hour. These lunch hour sessions were made possible through special arrangements established by each school principal. The purpose of these get togethers was to review progress, share experiences and give professional help as needed.

In the Control schools, the only method for meeting with the teachers on a group basis was the lunch time get togethers. Not only the problems of the basic reader approach were reviewed, but also professional advice was given as requested.

It must be kept in mind that each time that the director or his assistant visited a classroom, short consultation periods were held with the teacher involved. This was true in the Experimental and the Control schools. In addition, two written reports, addressed to the teachers were prepared. One such report went out in November and another in April. The purpose of these reports was to review progress and plans.

Teacher morale and interest in the project was excellent almost throughout. In the early months some of the teachers in the Experimental population had an evident tongue in cheek attitude toward the study. However, by December, this had changed to open and hearty support. The rapport between all the teachers and the project director and his assistant was especially good throughout. Teachers seemed at ease with both persons and posed questions and accepted suggestions in a professional manner.

Classroom teachers administering both the pretests and the posttests were supervised and aided by the project director, research assistant, school building principal and selected personnel of the Reading Study Center of the University of Delaware. In each instance, teachers were schooled in test procedure through a study of the manuals prior to the testing situation.

CHAPTER V

ANALYSES OF DATA

In this chapter all the results are reported. First is a report on Chronological Ages of both populations. This is followed by an account of the Mental Age findings based on the Pintner-Cunningham Test of Mental Ability. The final section reports results obtained on the pretests and the posttests.

Statistical analyses were used to test the hypotheses declared (see pp. 2-4). Correlation matrices were generated for pretests and posttests with means and standard deviations reported for each variable. F test of equality of variance, and *t* test of difference between means, with appropriate degrees of freedom under the assumption of equal variance, and *t* test of difference between means, with appropriate degrees of freedom under the assumption of unequal variances was computed. Analysis of covariance was used where appropriate.[9] The computations were accomplished by means of Scientific Data System's (SDS9300) computer, located in the Computer Center on the campus of the University of Delaware, Newark, Delaware.

Chronological Ages: As reported earlier the chronological ages of both populations was influenced by regulations established by the State Department of Education, Dover, Delaware. To be admitted to first grade in September of any one year a child must be six years old on or before 31 December. Expressed differently this can be interpreted to mean that to be admitted to first grade a child can be no younger than 5 years 8 months or 68 months of age at the start of school in September. On the other hand the upper age limit for entering first grade children was 6 years 8 months or 80 months of age. A limited number of children repeating first grade were also a part of the study. This altered the upper age limit, making it 7 years 8 months or 92 months of age. The possible range of chronological age varied therefore from a low of 68 months to a high of 92 months.

---

[9] H. M. Walker and J. Lev, Statistical Inference, New York: Henry Holt and Company, 1953, pp. 156-158.

Table 3

Means and Test of Significance of Chronological Age of Boys, Girls, and Total Population of Experimental and Control Groups.

	EXPERIMENTAL		CONTROL					
	N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
Boys	119	75.61	117	77.53	-1.92	-2.70	226	.01
Girls	113	75.45	84	75.61	- .16	- .26	195	n.s.*
Total	232	75.53	201	76.73	-1.20	-2.50	431	.02

* n.s. means not significant

The boys in the Control population were significantly older than the boys of the Experimental population. There was no significant difference in age between girls of the two treatment groups. The total Control population was significantly (.02 level) older than the Experimental population.

When the boys and girls in the Experimental population were compared no significant difference in chronological age was evident. When the boys and girls in the Control population were compared it was found that the boys were significantly older (.01 level) than the girls.

In the Control population there were 47 repeaters representing 23 per cent of the total population. Thirty of these 47 were boys. On the other hand there were only 25 repeaters in the Experimental population and represented 11 per cent of the total population. Sixteen of these were boys and 9 were girls. Also of interest is the fact that 17 of the 25 repeaters in the Experimental population were in the Frederick Douglass School.

Undoubtedly the number of repeaters in the Control population influenced the age level of that population and produced the results reported above. It may be speculated, too, that the larger number of repeaters in the Control Group may have resulted in better scholastic performance since this was their second go-around with the learning to read process. On the other hand the attitude of failure that may have been acquired by some or all may have influenced results negatively.

Mental Ages: The results reported in this section were obtained in September 1964 by administering the Pintner-Cunningham Test of Mental Ability, Form A, 1964 Revised. The norms used were those revised by the publisher in May, 1965.

Table 4

Means and Test of Significance of Pintner-Cunningham Mental Age Results Expressed in Months for Boys, Girls, and Total Population of Experimental and Control Groups.

Table 4 (Continued)

	EXPERIMENTAL		CONTROL					
	N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
Boys	119	71.84	117	69.28	2.56	1.48	234	n.s.
Girls	113	74.94	84	75.96	-1.02	-.53	194	n.s.
Total	232	73.35	201	72.08	1.27	.96	423	n.s.

There was no significant difference in mental age between the boys of the Experimental Group and the boys of the Control Group. There was no significant difference between the girls of the two treatment groups. There was no significant difference in mental age between the total Experimental and the total Control population.

The Control girls had a significantly higher mental age than the Control boys at the .01 level of significance. The difference in mental age between the boys Experimental and the girls Experimental was not significant.

Readiness Test Results: The following reading readiness tests were administered. The Murphy-Durrell Diagnostic Reading Readiness Test, Research Edition, 1964, the Metropolitan Readiness Tests, Form A, 1965, Thurstone Pattern Copying Test, Experimental Edition, the Thurstone and Jeffrey, Identical Forms, Experimental Edition and the Detroit Word Recognition Test.

Auditory language ability was determined by the Metropolitan Readiness Test, Form A, subtest 1, Word Meaning and subtest 2, Listening, and by the Murphy-Durrell Diagnostic Reading Test, Revised Edition, 1964, Phonemes Tests, Part I and Part II, Letter

Names, and the Learning Rate Test.

Visual discrimination was measured by using the Thurstone Pattern Copying Test and the Thurstone and Jeffrey Identical Forms Test.

Table 5

Means and Test of Significance of Reading Readiness as Measured by the Murphy-Durrell Diagnostic Reading Readiness Test for Boys, Girls, and Total Population of Experimental and Control Groups.

	EXPERIMENTAL		CONTROL					
	N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
				Phonemes (Part I and II) Total				
Boys	119	18.54	117	12.43	6.11	3.67	233	.001
Girls	113	22.83	84	16.12	6.71	3.42	195	.001
Total	232	20.64	201	13.98	6.66	5.20	427	.001
				Letter Names (Capital Letters)				
Boys	119	13.79	117	13.06	.73	.48	234	n.s.
Girls	113	16.53	84	16.36	.17	.13	192	n.s.
Total	232	15.12	201	14.44	.68	.83	431	n.s.
				Letter Names (Lower Case)				
Boys	119	10.87	117	9.94	.93	1.08	230	n.s.
Girls	113	12.80	84	11.76	1.04	1.00	190	n.s.
Total	232	11.81	201	10.70	1.11	1.67	433	n.s.
				Letter Names (Total)				
Boys	119	24.53	117	23.00	1.53	.81	234	n.s.
Girls	113	29.34	84	28.13	1.21	.54	195	n.s.
Total	232	26.88	201	25.14	1.74	1.19	431	n.s.

Table 5 (Continued)

Learning Rate

Boys	119	7.52	117	7.12	.40	.73	229	n.s.
Girls	113	8.46	84	7.34	1.12	1.73	197	n.s.
Total	232	7.98	201	7.21	.77	1.81	429	n.s.

The means are based on raw score results. In the *Phonemes* subtest the boys in the Experimental Group performed significantly better than the boys of the Control population. The girls of the Experimental population performed significantly better than the girls of the Control population on the same test. The total Experimental population attained a significantly higher score on the *Phonemes* than the total Control population.

In the Letter Names subtest for both Capital and Lower Case Letters and the Learning Rate subtest there was no significant difference between the performance of the Experimental and Control populations.

Table 6

Means and Test of Significance of Readiness as Measured by the Metropolitan Readiness Test for Boys, Girls, and Total Population of Experimental and Control Groups.

	EXPERIMENTAL		CONTROL					
	N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
				Word Meaning				
Boys	119	8.29	117	7.69	.60	1.49	223	n.s.
Girls	113	7.44	84	7.18	.26	.63	196	n.s.
Total	232	7.88	201	7.48	.40	1.37	429	n.s.

Table 6 (Continued)

				Listening				
Boys	119	8.46	117	7.98	.48	1.21	232	n.s.
Girls	113	8.50	84	8.55	-.05	-.14	197	n.s.
Total	232	8.48	201	8.22	.26	.96	432	n.s.
				Matching				
Boys	119	5.72	117	5.60	.12	.25	229	n.s.
Girls	113	6.54	84	6.39	.15	.26	195	n.s.
Total	232	6.12	201	5.93	.19	.50	432	n.s.
				Alphabet				
Boys	119	7.95	117	6.72	1.23	2.02	231	.05
Girls	113	9.15	84	8.63	.52	.75	195	n.s.
Total	232	8.53	201	7.52	1.01	2.22	433	.05
				Numbers				
Boys	119	11.17	117	10.62	.55	.79	230	n.s.
Girls	113	11.79	84	11.81	-.02	-.03	196	n.s.
Total	232	11.47	201	11.12	.35	.72	430	n.s.
				Copying				
Boys	119	6.56	117	6.70	-.14	-.26	234	n.s.
Girls	113	7.54	84	7.25	.29	.56	195	n.s.
Total	232	7.04	201	6.93	.11	.29	431	n.s.
				Total				
Boys	119	48.21	117	45.32	2.89	1.11	226	n.s.
Girls	113	50.96	84	49.81	1.15	.44	197	n.s.
Total	232	49.55	201	47.19	2.36	1.28	427	n.s.

The means are based on raw scores. The results indicate that there was no significant difference between the performance of the Experimental Group and the Control Group on the Metropolitan Total. There was no significant difference between the boys of the Experimental Group and the Control Group. There was no significant difference between the girls of the Experimental Group and the girls of the Control Group.

On individual subtests there was no significant difference for boys, girls, or total population except on the Alphabet subtest. On the Alphabet test the boys of the Experimental population achieved a significantly higher score than the boys of the Control population. There was also a significant difference between the total population in favor of the Experimental Group.

Table 7

Means and Test of Significance of Thurstone Pattern Copying Test for Boys, Girls, and Total Population of Experimental and Control Groups.

	EXPERIMENTAL		CONTROL					
	N	Mean	N	Mean	Mean Diff.	t Value of Mean	d.f.	Level of Sig.
Boys	119	10.52	117	10.05	-.47	.31	234	n.s.
Girls	113	10.80	84	9.76	1.04	1.11	196	n.s.
Total	232	10.66	201	9.93	.73	1.10	424	n.s.

There was no significant difference between the boys Experimental and the boys Control. There was no significant difference between the girls of the Experimental population and the girls of the Control population. And there was no significant difference between the total Experimental and total Control population.

Table 8

Means and Test of Significance of Thurstone and Jeffrey Identical Forms Test for Boys, Girls, and Total Population of Experimental and Control Groups.

	EXPERIMENTAL		CONTROL					
	N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
Boys	119	10.88	117	16.18	-5.30	-4.74	200	.001
Girls	113	12.74	84	21.84	-9.10	-7.09	151	.001
Total	232	11.79	201	18.55	-6.76	-7.76	347	.001

On the Identical Forms test the boys of the Control population attained significantly higher scores than the boys of the Experimental population. The girls of the Control population also achieved significantly higher scores than the girls of the Experimental population. Finally, the total Control population achieved significantly higher scores than the total Experimental population.

In no instance up to this point, with the exception of mental age for the Control girls, did the Control population perform significantly better than the Experimental population on a pretest measure. Not only is the performance of the Control population on Identical Forms different from their performance on most of the other tests administered but also the differences are highly significant. We do not know how to account for these differences.

The Detroit Word Recognition Test: Teachers in both treatment groups were asked to identify the children they thought could recognize words when they entered school at the beginning of the school year. Twenty-one children were so identified in the Experimental population and 24 in the Control Group. The Detroit Word Recognition Test was individually administered to each of the 45 children immediately after the Murphy-Durrell Diagnostic Reading Readiness Test, the Metropolitan Readiness Test and the Pintner-Cunningham Test of Mental Ability, had been administered.

Table 9

A List of the Number of Words Known by Selected Children in the Experimental Population and the Control Population on the Detroit Word Learning Test

Number of Words Known

Experimental	Control
7	4
4	2
17	1
17	3
36	5
4	1
23	4
27	1
19	3
38	5
4	3
10	1
36	5
25	10
7	1
8	3
3	32
23	1
4	3
8	1
23	4
T 353	4
	22
Av. 16.8 wds.	T 120
	Av. 5 wds.

The number of words recognized by each child tested and the average number known by each group has been recorded in Table 9. In the Experimental population the range of words known varied from 3 - 30 with an average score of 14.0 words. In the Control population the range of words known varied from 1 - 12 words with an average score of 5 words.

Summary: Readiness test results show the total Experimental population achieving significantly higher scores than the total Control population in the Murphy-Durrell tests of Phonemes and in the Metropolitan Alphabet test.

The total Control population achieved significantly better than the total Experimental population on the Thurstone and Jeffrey Identical Forms test.

There was no significant difference in performance between the total populations on the Murphy-Durrell Letter Names tests, the Metropolitan subtests of Word Meaning, Listening, Matching, Numbers, Copying, and Total Score, and the Thurstone Pattern Copying test.

The boys in the Experimental population achieved significantly better than the boys in the Control population on the Murphy-Durrell test of Phonemes and on the Metropolitan Alphabet subtest. The boys in the Control population achieved significantly better than the boys in the Experimental population on the Thurstone and Jeffrey Identical Forms test.

The boys in each population achieved about equally as well on the Murphy-Durrell Letter Names tests and Learning Rate, the

Metropolitan subtests of Word Meaning, Listening, Matching, Numbers, Copying and Total Score, and the Thurstone Pattern Copying test.

The girls in the Experimental population achieved significantly better than the girls in the Control population on the Murphy-Durrell test of Phonemes. The girls in each population achieved about equally as well on the Murphy-Durrell Letter Names tests and Learning Rate, the entire Metropolitan subtest battery of Word Meaning, Listening, Matching, Alphabet, Numbers, Copying, and Total Score, and the Thurstone Pattern Copying test. The girls in the Control population achieved significantly better than the girls in the Experimental population on the Thurstone and Jeffrey Identical Forms test.

Posttest Results: The following instruments to measure achievement were administered between April and May, and in the following order: San Diego Reading Attitude Inventory, Stanford Achievement Test, Primary I, Form X, 1964, the Gilmore Oral Reading Test, Fry Test of Phonetically Regular Words Oral Reading Test, Gates Word Pronunciation Test, and the Karlsen Phonemic Word Test. In addition a Creative Writing Sample was obtained from each child.

The San Diego Reading Attitude Inventory and the Stanford Achievement Test was administered to each child in the study. The Gilmore, Fry, Gates, and Karlsen Tests were administered to a randomly selected population. Even though creative writing samples were obtained from all the children of both populations only the writings of those pupils identified for the randomly selected population were analyzed and compared. The randomly selected population consisted of 33 pupils in the Experimental Group and 29 in the Control Group.

The posttests were not administered until after 140 teaching days had been accomplished. Final testing started the week in which the 140th teaching day occurred.

Problem I Will There Be A Significant Difference Between The Performance Of The Two Treatment Groups As Measured By The Stanford Achievement Test?

Table 10

Means and Test of Significance of Stanford Achievement Test, Primary I, Form X, for Boys, Girls, and Total Population of Experimental and Control Groups.

	EXPERIMENTAL		CONTROL					
	N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
				Word Reading				
Boys	119	18.07	117	15.20	2.87	2.81	222	.01
Girls	113	20.12	84	16.89	3.23	2.44	117	.01
Total	232	19.07	201	15.90	3.17	3.93	398	.001
				Paragraph Meaning				
Boys	119	17.53	117	15.02	2.51	2.01	207	.01
Girls	113	20.90	84	16.96	3.94	3.18	184	.01
Total	232	19.17	201	15.83	3.34	3.74	397	.001

Table 10 (Continued)

				Vocabulary				
Boys	119	19.46	117	17.96	1.50	1.58	234	n.s.
Girls	113	19.51	84	19.32	.19	.21	197	n.s.
Total	232	19.49	201	18.53	.96	1.43	428	n.s.
				Spelling				
Boys	119	9.60	117	7.98	1.62	1.87	234	n.s.
Girls	113	12.19	84	10.16	2.03	2.43	197	.02
Total	232	10.86	201	8.89	1.97	3.19	431	.01
				Word Study Skills				
Boys	119	33.96	117	31.99	1.97	1.26	234	n.s.
Girls	113	36.56	84	36.18	.38	.23	197	n.s.
Total	232	35.22	201	33.74	1.48	1.31	431	n.s.
				Arithmetic				
Boys	119	29.67	117	34.91	-5.24	-2.23	234	.03
Girls	113	32.55	84	38.92	-6.37	-2.86	197	.01
Total	232	31.07	201	36.58	-5.51	-3.33	432	.001

It seems best to discuss the answer to the question raised in Problem I by using the three ability groupings described by the authors of the Stanford Achievement Test, Primary I Battery. They indicate, "The Primary I Battery includes tests of reading, arithmetic, and spelling. . . . . an additional test of vocabulary is included as a measure of general knowledge."[10]

---

[10] Truman L. Kelley et al. Stanford Achievement Test, Directions for Administering Primary I Battery. New York, Harcourt, Brace and World, Inc., 1964.

Problem I-A. Reading Abilities. Reading is measured by means of three tests--Word Reading, Paragraph Meaning, and Word Study Skills. Results indicate that in Word Reading and Paragraph Meaning the Experimental population achieved significantly higher scores than did the Control population. In Word Study Skills there was no significant difference.

Problem I-B. Arithmetic. Arithmetic is measured by means of one test which contains three parts - Measures, Problem Solving and Number Concepts. Results indicate that there is a significant difference between the performance of the Experimental and the Control population on this test in favor of the Control Group.

Problem I-C. Spelling. Spelling is measured by means of a single dictation-type test. Results indicate that the Experimental population achieved significantly better than the Control population.

Problem I-D. Vocabulary. The Vocabulary test is described as being a measure of general knowledge and measures a pupil's vocabulary independent of his reading skill. The two treatment groups achieved equally as well.

Problem II Will There Be A Significant Difference Between The Performance Of The Boys Of The Two Treatment Groups And The Girls Of The Two Treatment Groups As Measured By The Stanford Achievement Test?

Problem II-A. Reading Abilities. The results indicate that the boys in the Experimental population achieved significantly better in two of the reading subtests - Word Reading and Paragraph

Meaning. There was no significant difference between their performances on the Word Study Skills test.

The results indicate that the Experimental population girls achieved significantly better in Word Reading and Paragraph Meaning subtests but not in Word Study Skills.

Problem II-B. Arithmetic. The results indicate that there was a significant difference in favor of the boys in the Control Group. This was true of the girls in the Control population also.

Problem II-C. Spelling. The results indicate that there was no significant difference in performance between the boys of the two treatment groups. The girls of the Experimental population achieved significantly higher scores than the girls in the Control population.

Problem II-D. Vocabulary. The results indicate that the boys in the Experimental population did not perform significantly better than the boys in the Control population and neither did the girls.

Problem III Will There Be A Significant Difference In Attitude Toward Reading Between The Two Treatment Groups As Measured By The San Diego Reading Attitude Inventory?

Table 11

Means and Test of Significance of Attitudes Toward Reading as Measured by the San Diego Reading Attitude Inventory for Boys, Girls, and Total Population of Experimental and Control Groups.

	EXPERIMENTAL		CONTROL		Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
	N	Mean	N	Mean				
Boys	119	18.27	117	18.92	-.65	-.22	192	n.s.
Girls	113	19.14	84	19.26	-.12	-1.32	234	n.s.
Total	232	18.69	201	19.06	-.37	-.99	421	n.s.

Problem III-A. Results indicate no significant difference between the attitudes toward reading of the two total populations.

Problem III-B. There was no difference in attitude toward reading of the boys in the two populations and not for the girls either.

The reader is encouraged to turn to Appendix D and examine the 25 items in the inventory and note the nature of the inquiries made. Illustrative are: Do you like to read catalogues? Do you think reading recipes is fun? Do you like to read hard books?

The responses on each of the 25 items by each participant in the random sample was tabulated so that a more detailed comparison might be made. The total included 33 children from the Experimental population and 39 children from the Control population. This analysis shows that responses to items 3,9,10,11,13, and 19 divided both populations sharply.

The Control population children gave a resounding no answer to: Item 3, Are you interested in what other people read? Item 13, Do you like to read the newspaper? Item 19. Do you feel that reading time is the best part of the school day? And a resounding yes answer to Item 9, Do you think that most things are more fun than reading?

The Experimental population children gave a resounding no answer to Item 10, Do you like to read aloud for other children at school? and Item 11, Do you think reading recipes is fun?

The statistics obtained in the analysis of variance whereby the two treatment populations were divided according to I.Q. groups, provided additional information of interest. The children in the below 70 group in the Control population expressed a significantly more favorable attitude toward reading than did the comparable grouping in the Experimental population.

Problem IV Will There Be A Significant Difference Between The Oral Reading Performance Of A Random Sample Population From The Two Treatment Groups As Measured By The Gilmore Oral Reading Test?

Table 12

Means and Test of Significance of Oral Reading Performance as Measured by the Gilmore Oral Reading Test.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
			Accuracy (Grade Equivalent)				
35	2.20	35	1.65	.55	2.04	60	.05
			Rate (WPM)				
35	51.23	35	52.57	-1.34	-.24	63	n.s.

Problem IV-A. Accuracy. On an individually administered test of oral reading accuracy the Experimental population performed significantly better than the Control population.

Problem IV-B. Rate. On an individually administered test of oral reading rate there was no difference between populations.

Problem V-A. Will There Be A Significant Difference Between The Word Recognition Ability On A Random Sample Population From The Two Treatment Groups As Measured By The Fry Test Of Phonetically Regular Words?

The directors of the 27 projects thought it advisable to develop a word recognition phonic test and appointed a committee to do this. Bijorn Karlsen of the University of Minnesota submitted a list as did Edward Fry. It was then suggested that both lists be used. It was hoped that most of the words in these tests would not be in the children's sight vocabulary. This being true a child asked to pronounce the words aloud would have to rely on the use of phonetic skills.

Table 13

Means and Test of Significance of Word Recognition Ability as Measured by Fry Phonetically Regular Words Oral Reading Test.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	10.60	35	2.29	8.31	4.72	45	.001

On the individually administered test of Phonetically Regular Words the Experimental population achieved significantly better than the Control population.

Problem V-B. Will There Be A Significant Difference Between The Word Recognition Ability Of A Random Sample Population From The Two Treatment Groups As Measured By The Karlsen Phonemic Word Test?

Table 14

Means and Test of Significance of Word Recognition Ability as Measured by the Karlsen Phonemic Word Test.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	16.97	35	6.34	10.63	4.92	44	.001

The Experimental Group achieved significantly higher scores on the Karlsen Phonemic Word test than the Control population.

Problem V-C. Will There Be A Significant Difference Between The Word Recognition Ability Of The Experimental Group And The Control Group As Measured By The Gates Word Pronunciation Test?

Table 15

Means and Test of Significance of Word Recognition Ability as Measured by the Gates Word Pronunciation Test.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	14.43	35	9.71	4.72	2.58	47	.02

The Experimental population achieved significantly higher scores on the Gates Word Pronunciation Test than did the Control group.

Measures of Written Language: Directors of studies comparing the language-experience approach with other approaches requested at the December 1964 meeting in Minnesota of the 27 directors that some test be prepared to measure the creative writing ability of all the children. None of the posttests reported thus far contained a measure of written language abilities and the need for such a test was recognized so that at least in part the children might display such skills.

A committee was appointed. A test form was devised and distributed to the directors for critical reaction. Then a final form was prepared reflecting the changes recommended. A principal source of disagreement among the 27 directors was the means for stimulating a written response. It was felt that those children unaccustomed to doing creative writing would not know how to respond to a stimulus unless the directions were very simple and the stimulus quite common and universal. Compromising was done and a test *(see appendix) was prepared and distributed.

Two writing samples were to be obtained from all the children in all treatment groups. The directions for obtaining the first sample were described as "rather simple". Pupils were asked to "write their favorite story". Teachers were asked to encourage the pupils to write, but were not to provide any other motivational assistance. Classroom conditions were to be kept as normal as possible. Additional encouragement of a general type might be used toward "getting the pupils to write" but not to provide them with specific ideas. No specific titles or pictures were to be employed as stimuli. No spelling help was to be given but if pupils normally had learned to use a dictionary or flash cards or a spelling book "such practices" were to be "allowed". Twenty minutes was allowed as writing time.

The second writing sample was referred to as a unique stimulus measure. The purpose of this measure was to give pupils an opportunity to write stories using a motivational stimulus with which they were familiar. Teachers were instructed to use whatever motivational devices they wished or typically used in encouraging pupils to write stories. Again no spelling help was to be given other than the use of spelling aids as already described as allowable for obtaining a response to a restricted stimulus measure. Again 20 minutes writing time was to be allowed.

The unique motivation varied as was to be expected. In one of the Control population schools the five teachers used as a source of motivation an assembly meeting at which a State policeman spoke about bicycle safety. In other classrooms the stimulus varied: a kool-aid stand, a mechanical dog, my pet, summer fun, and so on.

Three scoring measures were used: a mechanics ratio scale based on a check of capitalization, punctuation, and indentation; a spelling scale based on the total number of words spelled correctly; and a total number of running words count.

Only the writings of the pupils in the Random Sample population described earlier were corrected as described for comparison purposes.

It is to be noted that no measure for appraising the creative writing (originality, complexity, interest) facility was either developed or used. No agreement could be obtained from the 27 directors about how these criterion could be measured. No ready-made scales for such evaluations were available. Accordingly the special committee was asked not to attempt to set up scales for appraising creative factors.

Problem VI-A. Will There Be A Significant Difference In Writing Mechanics Between The Two Treatment Groups As Measured By The Grade One Written Language Measure When Using A Restricted Stimulus?

Table 16

Means and Test of Significance of Writing Mechanics as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	92.43	35	52.71	39.72	2 .92	40	.01

The total mechanics ratio scores was recorded in per cent. The results show that the random sample group drawn from the Experimental population achieved significantly better mechanics ratio scores than did the random sample group drawn from the Control population. From this it might be generalized that the total Experimental population achieved significantly better mechanics-ratio scores than did the Control population.

Problem VI-B. Will There Be A Significant Difference In Total Number Of Words Spelled Correctly Between The Two Treatment Groups As Measured By The Grade One Written Language Measure When Using A Restricted Stimulus?

Table 17

Means and Test of Significance of Total Number of Words Spelled Correctly in the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	35.71	35	19.80	15.91	2.67	46	.01

The results show that the random sample groups drawn from the Experimental population achieved significantly better in spelling than did the random sample groups drawn from the Control population. From this it might be generalized that the total Experimental population achieved significantly better in spelling in a functional writing situation than did the Control population.

Problem VI-C. Will There Be A Significant Difference In Total Number of Running Words Between The Two Treatment Groups As Measured By The Grade One Written Language When Using A Restricted Stimulus?

Table 18

Means and Test of Significance of Total Number of Running Words as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population.

Table 18 (Continued)

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	42.80	35	22.37	20.43	2.93	45	.01

The results indicate that the random sample group of the Experimental population used significantly more running words in the functional writing situation than did the random sample group of the Control population.

Problem VII-A. Will There Be A Significant Difference In The Number Of Different Words Spelled Correctly Between The Two Treatment Groups As Measured By The Grade One Written Language Measure When Using A Restricted Stimulus?

In addition to the test instruments suggested for joint use in the 27 projects, the collection of data unique to individual projects was encouraged. Additional data analyzed from the two treatment groups reported in this study is derived from the creative writing of the random sample population. Unique data analysis from the writing sample includes - Total Number of Different Words Correctly Spelled, and Measures of Originality, Interest, and Consistency.

In a preliminary examination of the creative writing samples of the random sample population it was noted that some children had used certain words over and over again thus limiting the number of different words used. This in turn limited the spelling requirements and resulted in more language redundancy.

Other children showed more variety, used more running words and showed less language redundancy. Examination of the different words spelled correctly yielded a measure of ability different from that obtained by the number of running words spelled correctly.

Obviously, performance on different words spelled correctly could be more indicative of spelling prowess. Performance on different words spelled correctly is reported in the following table.

Table 19

Means and Test of Significance of Number of Different Words Spelled Correctly as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	18.20	35	11.49	6.71	2.75	59	.01

Different words can best be defined negatively by defining running words. Running words is a count of each word in a child's written production. By way of illustration, if a word such as the word "the" was used five times and spelled correctly each time it was counted five times, whereas in a count of different words only, the word "the" would have counted but once.

The results indicate that the random sample group drawn from the Experimental population achieved a significantly higher score in different words spelled correctly than did the random sample group of the Control population. From this it can be generalized that the total Experimental population achieved significantly better in spelling different words in the functional writing situation than did the Control population.

Problem VII-B. Will There Be A Significant Difference In The Number Of Different Words Used Between The Two Treatment Groups As Measured By The Grade One Written Language Measure When Using A Restricted Stimulus?

Table 20

Means and Test of Significance of Number of Different Words Used as Measured by the Grade One Written Language Measure Restricted Stimulus on a Random Sample Population.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	25.71	35	14.40	11.31	2.82	68	.01

The results indicate that the Experimental population children used significantly more words than did the children in the Control population. In addition the range of the number of words used provides significant information. The children in the Experimental population had a range of different word usage that varied from 8 to 55 words. The Control population range varied from 2 to 28 words.

Three additional checks were made of the creative writing sample. One dealt with the mechanics of writing, the other two with story content. The organization of each story was rated on five point rating scale as defined by Yamamoto.[11] In scoring, the following five criteria are used: Balance (Integration), Arrangement (Order), Consistency, Conciseness, and Clarity.

An Originality score and an Interest score for each story was obtained using the criteria of scales as suggested by Torrance.[12] In determining the Originality score of a story--one point is given for the occurrence of either one of the following nine characteristics: Picturesqueness, Vividness, Flavor, Personal element, Original solution or ending, Original setting or plot, Humor, Invented words, Names, etc., and other unusual twists in style or content.

In deriving a set of criteria for use in assessing Interest the following nine indicators were considered and one point was awarded for the presence of each: Conversational tone, Naturalness, Use of quotation, Variety in kind of sentence, Variety in length of sentence and structure, Personal touch, Humor, Questions and answers, and Feelings of characters.

It should be noted that the rating of written stories as reported by Torrance differ from the creative writing in this study in two ways. First, the Torrance population had been instructed to write "imaginative stories". No such instructions were given to the children in this study. Second, Torrance's population was drawn from grades three through six. Only first grade level children were used in the Delaware study being reported here. In addition, the people who scored the papers of the random sample population used as criterion for their decision making the illustrations provided by Torrance for his population of third through sixth grade level children. Most likely a more accurate and objective measure could have been obtained if this adaptation had not been necessary. However, at the time it was not expedient to develop a new criterion scale for use at the first grade level. It seems appropriate to conjecture therefore that the measures reported here are lower than would have been obtained if criterion adjusted to the first grade level had been used.

---

[11] Yamamoto, Karou, Experimental Scoring Manual For Minnesota Tests of Creative Thinking and Writing, Bureau of Education Research, Kent State University, Kent, Ohio, 1964.

[12] ibid.

Problem VII-C. Will There Be A Difference In Mean Scores Of Originality, And Mean Scores Of Interest Between The Two Treatment Groups As Measured By The Grade One Written Language Measure When Using A Restricted Stimulus?

Table 21

Means and Test of Significance on Originality and Interest on Grade One Written Language Measure Restricted Stimulus on a Random Sample Population.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
				Originality			
35	1.19	35	.71	.48	3.58	68	.001
				Interest			
35	2.23	35	1.02	1.19	4.36	54	.001

It may be observed in Table 21 that the random sample group of the Experimental population achieved significantly better than the Control population on both Originality and Interest.

Problem VII-D. Will There Be A Difference In Mean Scores On A Measure Of Story Consistency Between The Two Treatment Groups As Measured By The Grade One Written Language Measure When Using A Restricted Stimulus?

Table 22

Means and Test of Significance of Story Consistency on Grade One Written Language Measure Restricted Stimulus on a Random Sample Population.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
35	2.66	35	1.14	1.52	4.35	65	.001

The results indicate that the Experimental population achieved significantly better than the Control population on a test of story consistency.

Problem VIII-A. Is There A Significant Difference In Reading Achievement Between The Two Treatment Groups As Measured By The Stanford Achievement Test Primary I Battery Form X When Readiness Test Results And Intelligence Test Results Are Held Constant?

Analysis of covariance or the statistical control of an experimental variable (such as intelligence) was used to remove potential sources of bias in an experiment. The purpose of this study was to determine the effect of two different methods of teaching reading to first grade children. Variation or the variate in this experiment was determined by means of achievement tests in reading. The co-variate in this study was the degree of intelligence and readiness as measured by the Pintner-Cunningham Primary Test of Mental Ability, the Metropolitan Readiness Test, and the Murphy-Durrell Diagnostic Reading Readiness Test at the start of the experiment.

In this instance total readiness test results and intelligence test results were held constant for the two treatment groups.

The interactions of the variables may be summarized as follows:

> There were significant differences between the Experimental and Control Groups in favor of the Experimental population in each of the following subtests in the Stanford Achievement Battery.
>
> 1-a. Word Reading
> 1-b. Paragraph Meaning
> 1-c. Spelling
> 1-d. Vocabulary
>
> There was no significant difference between the Experimental and Control Groups on the following subtest in the Stanford Achievement Battery.
>
> 2-a. Word Study Skills

Problem VIII-B. Is There A Significant Difference In Reading Achievement Between The Two Treatment Groups When The Segregated Population Scores Were Removed From The Experimental Population As Measured By The Stanford Achievement Test Primary I Battery Form X When Readiness And Intelligence Test Results Are Held Constant?

It is to be noted that under the conditions described the Experimental population again achieved significantly better on subtests of Word Reading, Paragraph Meaning, Spelling, and Vocabulary. There was no significant difference between the Experimental and Control Groups on the Word Study Skills subtest.

Problem VIII-C. Is There A Significant Difference In Oral Reading Performance Between The Two Treatment Groups As Measured By The Gilmore Oral Reading Test When Readiness And Intelligence Test Results Are Held Constant?

The interactions of these variables may be summarized as follows:

There was a significant difference between the Experimental and Control Group favoring the Experimental Group in oral reading accuracy.

There was no significant difference between the Experimental and Control Group in rate of oral reading.

Problem VIII-D. Is There A Significant Difference In Word Recognition Ability Between The Two Treatment Groups As Measured By The Fry Phonetically Regular Words Oral Reading Test, The Gates Word Pronunciation Test, And The Karlsen Phonemic Word Test When Readiness And Intelligence Tests Results Are Held Constant?

The interactions of these variables may be summarized as follows:

There was a significant difference between the Experimental Group and the Control Group favoring the Experimental population on the Fry Phonetically Regular Words Oral Reading Test.

There was a significant difference between the Experimental Group and the Control Group favoring the Experimental population on the Gates Word Pronunciation Test.

There was a significant difference between the Experimental Group and the Control Group favoring the Experimental population on the Karlsen Phonemic Word Test.

Problem VIII-E. Is There A Significant Difference In The Writing Performance Between The Two Treatment Groups As Measured By The First Grade Written Language Measure When Readiness And Intelligence Test Results Are Held Constant?

The interactions of these variables may be summarized as follows:

There was a significant difference between the Experimental Group and the Control Group favoring the Experimental population on the Mechanics Ratio Scale.

There was a significant difference between the Experimental Group and the Control Group favoring the Experimental population in Total Number of Words Spelled Correctly.

There was a significant difference between the Experimental Group and the Control Group favoring the Experimental population on Total Number of Running Words.

There was a significant difference between the Experimental Group and the Control Group favoring the Experimental population in Number of Different Words Spelled Correctly.

Problem IX Will There Be Any Pretest Measures That Will Be The Best Predictors In Achievement?

The reader of this report should be aware by now that modifications of original proposals occurred as a result of the meeting of the 27 directors of the U.S.O.E. first grade reading research studies at the coordinating Center at the University of Minnesota. A comparison of the 27 reports will show how many of the studies could report all of the findings as proposed at Minnesota or how many added information of a unique data character.

Correlation Matrices were accomplished to show the extent to which one variable was effected by another. Total population scores were used as all pretests and posttests were analyzed in the matrix.[13] Analyses were made for the total Experimental Group and the total Control Group, for boys Experimental and boys Control populations, and girls Experimental and girls Control populations.

Examination of Appendix A Tables for the total Experimental population shows that the two readiness tests as well as the intelligence test had high predictive value for achievement in each of the areas measured by the Stanford Achievement Test - Reading, Spelling, Vocabulary and Arithmetic. This means of course that knowledge of letter names for instance had as much predictive value for achievement in arithmetic as in reading.

The findings for the total Control population are almost the same. Two exceptions occurred. The Learning Rate subtest in the Murphy-Durrell Diagnostic Reading Readiness Test did not yield a significant correlation when paired with Arithmetic. The Word Meaning subtest in the Metropolitan Readiness Test did not have predictive value for Spelling as measured by the Stanford Achievement Test.

When the boys and the girls in the Experimental population are considered separately, again the two readiness tests and the intelligence test results show significant predictive value for all the subtests in the Stanford Achievement Test.

The findings are almost the same for the boys in the Control population. Only the results on Word Meaning subtest of the Metropolitan did not have significant predictive value for Spelling.

---

[13] Wilfred Dixon and Frank Massey, Jr., Introduction to Statistical Analysis, New York: McGraw-Hill Book Company, Inc., 1957, p. 468.

The picture with the girls of the Control population is markedly different and requires detailed reporting. The following subtest results on the two reading readiness tests did not have predictive value for achievement in the different Stanford Achievement subtests.

Murphy-Durrell	Stanford
Phonemes	Vocabulary, Spelling Word Study Skills
Total Letters	Word Study Skills
Learning Rate	Word Reading, Paragraph Meaning, Vocabulary Word Study Skills Arithmetic
Metropolitan	
Word Meaning	Spelling
Listening	Word Reading, Paragraph Meaning, Spelling, Word Study Skills, Arithmetic
Matching	Word Reading, Paragraph Meaning, Word Study Skills
Alphabet	Word Study Skills
Copying	Word Reading, Word Study Skills

In general then it is to be noted that the results on the Pintner-Cunningham Test of Mental Ability had high predictive value for achievement in each of the four areas measured on the Stanford Achievement Test and did so for both total populations and for both populations considered by sex. These same conditions are true of the two readiness tests for the Experimental population. Readiness test results yielded a varied pattern for the Control population and particularly for the girls.

Problem X Will There Be A Significant Difference In Reading Achievement Between The Two Groups As Influenced By Kindergarten Experience?

It was thought desirable to study the performance of the children with kindergarten experience to note what influence if any this training might have had on performance on the pretests of readiness and the achievement posttests. Accordingly both populations were reorganized into three different groups: first, those pupils with more than 100 days of kindergarten experience; second, those with 20 days or less experience; third, those with no experience. The pupils in the second category had experience attending either summer term sessions or Sunday School sessions or the like and the number of days of such experience was reported as 20 days or less.

Table 23

Means, with Records on Tests of Significance Between the Experimental and Control Population Indicating the Influence of Much Kindergarten Experience, Limited Experience, and No Experience.

100 days plus

		Murphy-Durrell			Met.	Stanford Achievement					
	N	Ph.	L.Total	L.Rate	Total	WR	PR	Voc.	Sp.	W.S.S.	Arith.
Experimental	100	28.27	34.54	10.37*	62.12	23.31**	24.6[illegible]*	23.39*	14.28*	41.25	37.20
Control	19	25.89	33.84	8.05	59.52	18.90	20.16	20.74	10.53	38.42	46.95**

20 days or less

		Murphy-Durrell			Met.	Stanford Achievement					
	N	Ph.	L.Total	L.Rate	Total	WR	PR	Voc.	Sp.	W.S.S.	Arith.
Experimental	41	21.49**	27.42	7.78	49.80	18.05*	18.24**	19.71	10.68	35.78	34.10
Control	71	13.84	27.87	7.56	50.94	16.80	16.89	19.59	9.52	34.42	38.70

no experience

		Murphy-Durrell			Met.	Stanford Achievement					
	N	Ph.	L.Total	L.Rate	Total	WR	PR	Voc.	Sp.	W.S.S.	Arith.
Experimental	91	11.88	18.21	5.44	35.12	14.87	13.57	15.10	7.18	28.35	22.98
Control	111	12.04	21.91	6.85	42.68	14.82	14.41	17.47**	8.21	32.50	33.45**

* Significant at or below the .05 level
** Significant at or below the .01 level

Problem X-A. Will There Be A Significant Difference In Reading Achievement Between The Two Treatment Groups As Measured By The Stanford Achievement Test Primary I Battery Form X When Kindergarten Experience Totals ONE HUNDRED DAYS Or More?

Comparison of the children in both populations who had 100 days or more of kindergarten experience shows that the children in the Experimental population achieved significantly better than the children in the Control population on the Murphy-Durrell pretest of Learning Rate. Stanford Achievement posttest results show the Experimental population achieving significantly better in Word Reading, Paragraph Meaning, Vocabulary, and Spelling. The Control population children achieved significantly better in Arithmetic. The subtests of the Murphy-Durrell Readiness Test are reported separately in Table 23 rather than total score because they had exhibited somewhat better predictive value.

Problem X-B. Will There Be A Significant Difference In Reading Achievement Between The Two Treatment Groups As Measured By The Stanford Achievement Test Primary I Battery Form X When Kindergarten Experience Totals TWENTY DAYS Or Less?

Comparison of children in both populations who had 20 days or less of kindergarten type experience shows very few differences to exist. The Experimental children achieved significantly better in the Murphy-Durrell Phonemes tests and in the Stanford Achievement Word Reading and Paragraph Meaning tests.

Problem X-C. Will There Be A Significant Difference In Reading Achievement Between The Two Treatment Groups As Measured By The Stanford Achievement Test Primary I Battery Form X, When The Children Have NO Kindergarten Experience?

When the children who had no kindergarten experience are compared it is to be noted that the pupils in the Control population achieved significantly better in readiness as measured by the total score on the Metropolitan Readiness Test. They also did significantly better on Vocabulary, Word Study Skills, and Arithmetic subtests.

Problem X-D. Will There Be A Significant Difference In Reading Achievement Between The Two Treatment Groups As Measured By The Stanford Achievement Test Primary I Battery Form X When The Children With ONE HUNDRED DAYS Or More Kindergarten Experience Are Compared With Those Children Who Had NO Kindergarten Experience?

When the children with 100 days or more kindergarten experience are compared with those who had no kindergarten experience results show that in each instance they achieved significantly better.

Problem XI Will There Be A Significant Difference In Achievement Between The Two Treatment Groups When The Pupils Are Regrouped Much Like The Terman Classifications Of Intelligence?

The information being reported here also falls in the unique data category. It was added to this study even though it imposed further delays in the preparation of the report because of an already overburdened computer system. Even so, it was thought desirable to compare the achievement of the two populations by regrouping the pupils within each population much like the quantification classification of intelligence as set up by Terman. Five levels were classified: 130 I.Q. and above or the superior group; 110-129 the above average group; 90-109 or the average group; 70-89 the low average or dull group; and the below 70 group.

The following distribution resulted:

Classification	Experimental Population	Control Population
130 - above	5	0
110 - 129	54	25
90 - 109	85	103
70 - 89	61	64
50 - 69	27	9
Total	232	201

In the 130 and above category the highest score was 142. In the 70 and below category the number of pupils scoring below 69 I.Q. were: Experimental 27, Control 9, with the lowest score in each population being Experimental 57 I.Q. and Control 54 I.Q.

Table 24

Means and Analysis of Reading Achievement as Measured by the Stanford Achievement Test, Primary I Battery, Form X, between the two treatment groups when the pupils are regrouped much like the Terman Classification of Intelligence.

	N	Mean I.Q.	WR	PM	Voc.	Spell.	WSS	Arith.
Superior								
Experimental	5	136	28.80	32.40	27.60	17.00	48.20	51.40
Above Average								
Experimental	54	119	26.15**	28.63**	26.24**	16.59**	46.52**	43.83
Control	25	120	19.52	19.64	22.76	12.24	39.08	49.24*
Average								
Experimental	85	100	21.55**	22.53**	21.95*	13.62**	38.89	36.04
Control	103	99	17.02	17.30	19.84	10.06	36.35	40.40*
Low Average								
Experimental	61	80	13.20	10.21	13.38	4.60	26.31	18.06
Control	64	80	13.72	12.97*	15.70**	6.42*	28.92	28.00**
Below 70 I.Q. Group								
Experimental	27	67	8.00	7.07	10.22	3.74	18.22	16.30
Control	9	66	8.67	8.78	11.78	3.78	23.33	18.78

* Significant at or below the .05 level

** Significant at or below the .01 level

Problem XI-A. Reading Ability. The Above Average (110-129 I.Q.) population of the Experimental Group achieved significantly better in Word Reading, Paragraph Meaning, and the Word Study Skills than did the Above Average population of the Control Group.

The Average (90-109 I.Q.) population of the Experimental Group achieved significantly better in Word Reading and Paragraph Meaning, than did the Average (90-109 I.Q.) population of the Control Group. In Word Study Skills there was no difference.

The Low Average (70-89 I.Q.) population of the Control Group achieved significantly better in Paragraph Meaning than the Low Average population of the Experimental Group. In Word Reading and Word Study Skills there was no difference.

In the Below 70 (69-54 I.Q.) populations neither group achieved significantly better.

Problem XI-B. Arithmetic. In two of the four comparisons made (Average and Low Average) the Control Group achieved significantly better in Arithmetic than did the Experimental population. There was no significant difference in achievement between the Above Average groups and the Below 70 I.Q. groups.

Problem XI-C. Spelling. The comparison of the Above Average and Average children shows that in both instances the Experimental population achieved significantly better than the Control population.

Comparison of the Low Average populations shows the children of the Control population achieving significantly better than those in the Experimental population.

When the Below 70 I.Q. groups are compared there is no significant difference between the Experimental and the Control populations.

Problem XI-D. Vocabulary. Comparison of the Above Average children in both populations shows that the Experimental population achieved significantly better than the Control population.

Comparison of the Average, Low Average and Below 70 I.Q. children in both populations shows that in each instance there is no significant difference in achievement.

Problem XII Will There Be A Significant Difference In Achievement Between The Two Treatment Groups When The Segregated Negro Children Are Removed From The Experimental Population?

Table 25

Means, and Tests of Significance of Reading Achievement as Measured by the Stanford Achievement Test, Primary I Battery, Form X for the Experimental Population Minus the Negro Population and the Total Control Population.

EXPERIMENTAL		CONTROL					
N	Mean	N	Mean	Mean Diff.	t Value of Diff.	d.f.	Level of Sig.
				Word Reading			
180	21.15	201	15.90	5.25	2.92	379	.01
				Paragraph Meaning			
180	21.73	201	15.83	5.90	3.07	379	.01
				Vocabulary			
180	21.84	201	18.53	3.31	2.24	379	.05
				Spelling			
180	12.43	201	8.89	3.54	2.47	374	.02

Table 25 (Continued)

Word Study Skills

180	38.82	201	33.74	5.08	2.72	379	.01

Arithmetic

180	34.53	201	36.58	-2.05	-1.59	377	n.s.

Problem XII-A. Reading Ability. Achievement in Word Reading, Paragraph Meaning, and Word Study Skills, shows the Experimental population achieving significantly higher than the Control population. Re-examination of the findings reported in Problem I shows that the differences reported for Word Reading and Paragraph Meaning were also significant. Now the difference in Word Study Skills becomes significant.

Problem XII-B. Arithmetic. Comparison of Arithmetic achievement shows that there is no significant difference between the Experimental and the Control populations. Re-examination of the findings reported in Problem I shows that previously there was a significant difference in favor of the Control population.

Problem XII-C. Spelling. Achievement in Spelling shows the Experimental population achieving significantly higher than the Control population. Re-examination of the findings reported in Problem I shows similar conditions to exist for the Girls and the Total populations.

Problem XII-D. Vocabulary. Achievement in Vocabulary shows the Experimental population achieving significantly higher than the Control population. Re-examination of the findings reported in Problem I shows that previously the difference in Vocabulary performance was not significant.

Problem XIII Will There Be A Significant Difference In Achievement As Measured By The Stanford Achievement Test, Primary I Battery, Form X, When Both The Experimental And Control Populations Are Compared With The National Sample Tested In The Stanford Achievement Test Standardization Program?

In the interest of the communities involved in this study it was thought advisable to compare both populations with the national sample used by the compilers of the Stanford Achievement Test for their standardization program. Total raw scores for both populations have been converted to grade scores and then used to read percentile rank and stanine scale positions in Table 24. Stanines and Selected Percentile Ranks Corresponding to Grade Scores (Middle of Grade 1 (January through April)).[14] This table was used because the testing was done in late April. Percentile rank permits the comparison of pupils with the scores of other pupils of the same grade status. Stanines are equally spaced steps or units in terms of standard deviation expressed along a scale ranging from 1 (low) to 9 (high) with the value 5 always representing average performance. A stanine of 7, 8, or 9 places a pupil well above the typical pupil in his grade, while the pupil in stanine 1, 2, or 3 is definitely below.

---

[14] Kelley, op. cit.

Table 26

Percentile Rank and Stanine Scale Comparison of the Two Populations with the National Sample.

	N	Raw Score	Grade Score	Percentile	Stanine
		Word Reading			
Experimental	232	19.07	17	70	6
Control	201	15.90	16	50	5
		Paragraph Meaning			
Experimental	232	19.17	17	76	6
Control	201	15.83	16	50	5
		Vocabulary			
Experimental	232	19.49	18	56	5
Control	201	18.53	18	56	5
		Spelling			
Experimental	232	10.86	18	70	6
Control	201	8.89	17	62	6
		Word Study Skills			
Experimental	232	35.22	18	62	6
Control	201	33.74	18	62	6
		Arithmetic			
Experimental	232	31.07	16	50	5
Control	201	36.58	18	66	6

Problem XIII-A. Reading Abilities. Word Reading and Paragraph Meaning results place the Experimental population 20 and 26 percentile points higher than the Control population and one stanine step higher. Both achieved equal ratings on the Word Study Skills subtest. So as compared with the standardization sample both populations merit a rating of typical or average in reading ability.

Problem XIII-B. Arithmetic. In Arithmetic the Control population achieved a rating 16 percentile points and one stanine step higher than the Experimental population. As compared with the standardization sample both populations merit a rating of typical or average in Arithmetic.

Problem XIII-C. Spelling. Both populations earned ratings at about the same level, with the Experimental population achieving a slightly higher percentile rank (eight points higher). As compared with the standardization population both groups attained a rating of high in the average group.

Problem XIII-D. Vocabulary. Again both populations placed equally well on both ranking systems and attained an average rating as compared with the standardization population.

Problem XIV Will There Be A Significant Difference In Achievement As Measured By The Stanford Achievement Test When The Experimental Population Has Removed From It The Segregated Negro Population And This Group Along With The Control Population Is Compared With A National Sample?

Table 27

Percentile Rank and Stanine Scale Comparison of the Two Populations With the National Sample.

Table 27 (Continued)

	N	Raw Score	Grade Score	Percentile	Stanine
Word Reading					
Experimental	180	21.15	18	80	7
Control	201	15.90	16	50	5
Paragraph Meaning					
Experimental	180	21.73	18	86	7
Control	201	15.83	16	50	5
Vocabulary					
Experimental	180	21.84	21	68	6
Control	201	18.53	18	56	5
Spelling					
Experimental	180	12.43	19	74	6
Control	201	8.89	17	62	6
Word Study Skills					
Experimental	180	38.82	20	76	6
Control	201	33.74	18	62	6
Arithmetic					
Experimental	180	34.53	17	60	6
Control	201	36.58	18	66	6

Problem XIV-A. Reading Abilities. Word Reading and Paragraph Meaning results place the Experimental population 30 and 36 percentile points higher than the Control population and two stanine steps higher. Both achieved about equal ratings on the Word Study Skills subtest.. When compared with the standardization sample the

Experimental population places in the superior group on Word Reading and Paragraph Meaning and high in the average group on Word Study Skills. The Control population places in the average group in Word Reading and Paragraph Meaning and in the high average group in Word Study Skills.

Problem XIV-B. Arithmetic. In Arithmetic the two populations achieved equally well earning ratings in the high average group when compared with the standardization population.

Problem XIV-C. Spelling. In Spelling the two populations achieved equally well earning ratings in the high average group when compared with the standardization populations.

Problem XIV-D. Vocabulary. In Vocabulary the Experimental population achieved a percentile rating twelve points higher than the Control population and one stanine step higher. Compared with the standardization population the Experimental Group achieved a high average rating and the Control population achieved an average rating.

CHAPTER VI

CONCLUSIONS AND IMPLICATIONS

Fourteen hypotheses were declared for this study, and in light of the findings reported in the last chapter the following conclusions may be declared.

Will There Be A Significant Difference Between The Performance Of The Two Treatment Groups As Measured By The Stanford Achievement Test?

The Experimental population achieved significantly higher scores than did the Control population on the tests of Word Reading, Paragraph Meaning, and Spelling. Both populations achieved equally as well on the tests of Word Study Skills and Vocabulary. The Control population achieved significantly better in Arithmetic. It might be concluded tentatively that the language arts approach to reading instruction is likely to result in better achievement in reading and spelling, but not in vocabulary and arithmetic.

* * *

Even though the implication seems quite clear that the language-experience or language arts approach to initial reading instruction is apt to result in better performance in the language arts areas than the basic reader approach caution must be urged. The total population performance on the measures of word study skills and vocabulary approached significance but did not yield significance. However, direction of attainment is pointed up. This success is apparent even though the Experimental population contained two classes of segregated negro children.

The fact that the Control population achieved significantly better on the test of arithmetic suggests that the teaching of arithmetic was not attended to equally well in both treatment groups. This could mean that the Experimental teachers devoted an inordinate amount of time to reading instruction to the neglect of other curriculum areas or that the method of arithmetic instruction was not as successful.

Not only did the Experimental population children achieve significantly better than their opposite number in the Paragraph Meaning test but did also in the test of Word Reading and almost so on the test of Word Study Skills. Another frequently voiced accusation about the language-experience approach is that it may develop better readers but that the children are not as skilled in the use of word attack skills as those prepared by a basic reader approach. To the degree that these two tests measure word-attack skill ability, the achievement of the total Experimental population approaches marked superiority.

The language-experience approach as defined in this study placed heavy emphasis on the dictating of experience stories and the writing of creative stories. It would be expected, therefore, that the children would perform well in spelling even though formal spelling instruction was not provided. The fact that the results show a significant superiority on the part of the Experimental population tends to support the conjecture about spelling.

Question five in the list of 14 is concerned with word recognition. As the reader now knows on each of the three tests the Experimental population performed significantly better than the Control population. These three tests required the children to read or pronounce the words and in this respect represented a more practical "reading" circumstance than does the Word Study Skills test in the Stanford battery. In the Stanford test the pupil is asked to mark one of three words that begins with the same sound as a word the teacher pronounces and to mark one of three words that ends with the same sound as a word the teacher pronounces. These conditions are obviously quite different from those in which the child must do the analyzing on his own and read a word.

Will There Be A Significant Difference Between The Performance Of The Boys And The Girls Of The Two Treatment Groups As Measured By The Stanford Achievement Test?

The boys in the Experimental population achieved significantly better than the boys in the Control Group on the tests of Word Reading and Paragraph Meaning. Both groups of boys achieved equally as well on the tests of Word Study Skills, Spelling, and Vocabulary. Again the Control Group achieved better in Arithmetic.

The girls in the Experimental population achieved significantly better than the girls in the Control population on Word Reading, Paragraph Meaning, and Spelling. Both groups achieved about equally as well on the tests of Word Study Skills and Vocabulary. The Control girls achieved better in Arithmetic.

It might be concluded that girls may fare better on the language arts approach and that boys will show up well particularly in reading.

* * *

It seems apparent that the girls in the Experimental population responded better to the language-experience approach than the boys. It is also apparent that they achieved better than did the Control girls. It might be said therefore that the greater language maturity commonly attributed to girls is being used to better advantage when the language-experience approach is used.

At the same time it is apparent that even with the boys the language-experience approach tends to produce better readers. Even though results in spelling approach significance this approach was unable to influence across the board performance sufficient to make the difference significant. The fact that the boys performed as well as they did is heartening and again tends to reflect favorably on the dictating-creative writing experience.

The fact that the Control boys and girls achieved better on the test of Arithmetic than did the Experimental Group comparison population reflects on the teaching of Arithmetic being done. It is apparent though that teachers in the Experimental population must have done some teaching of Arithmetic and did not devote exclusive attention to the teaching of reading.

Will There Be A Significant Difference In Attitude Toward Reading Between The Two Treatment Groups?

There was no difference in attitude toward reading as expressed by the two populations either on a total population basis or on a boy or girl basis. It can be concluded tentatively that both approaches produce about the same attitude toward reading.

* * *

This is a curious finding and puzzled us considerably until we made a more careful analysis of responses on different items in the inventory. Then it became more apparent than before that some of the items were of a curious nature as discussed on page 53. This led us to tabulate, on an item analysis basis, the responses to each item made by the children in the random sample population. Now it was discovered that even though the total response score might yield a good attitude rating, contrary responses on certain key items posed an odd set of conditions for the Control population. For so many children to say that the reading period was not the best part of the school day and that most things were more fun than reading and yet achieve an overall good attitude rating was puzzling. It must be kept in mind too that this test is not a standardized test. It is a good attempt at attitude appraisal but needs refining and testing so that norms may be declared.

What is most disturbing though is the fact that no better attitude measure was available. In addition the fact that all 27 directors agreed to the use of the test suggests that others may have agreed to use the test reluctantly, as I did.

A first response of the many visitors to observe the Experimental population invariably dealt with the attitude of the children. They obviously were reading much of the time, were reading widely, were enjoying what they read, and wanted to talk about what they read or wanted to read lines orally. In each of the 10 rooms children would approach a visitor freely and talk about their reading or demonstrate their reading ability. This was true even when Governor-elect Charles Terry spent a day visiting the classrooms. Their interest and attitude was such that they stood in awe of no one. They liked to read and to tell others that they did.

Will There Be A Significant Difference Between The Oral Reading Performance Of A Random Sample Population From The Two Treatment Groups?

On an individually administered test of oral reading the Experimental population achieved significantly better than the Control population on accuracy but not on rate of reading. Some evidence is provided permitting a tentative conclusion that the language-experience approach may result in more effective oral reading.

* * *

It could be that the nature of this performance and its degree of success reflects the frequent oral reading and rereading by the pupils of their individually dictated experience stories.

The pupils stories are of their own composition and like the little composers they are, when they reread they do so with a rhythm and a feel that only oral language authorship could command. There was little concern with rate of oral reading only with interpretation and expression.

Almost as much may be said for the creative stories pupils write. The oral rereading of these is stimulated by a pupil's flow of written words. It is their language and their ideas that are the source.

Early in the school year the pupils start reading to each other. It is a common sight to see two or three children grouped together reading and listening.

Because basic readers are not used for directed reading-thinking activities until pupils can read at a first reader level they have not been overexposed to the stilted language so characteristic of basic reader pre-primers and primers. First reader level books present a much more acceptable language pattern and one more readily like that children use for oral communication.

Will There Be A Significant Difference Between The Word Recognition Ability Of A Random Sample Population From The Two Treatment Groups?

Three measures of word recognition ability were used, the Fry Phonetically Regular Words, the Karlsen Phonemic Words, and the Gates Word Pronunciation. On each, the Experimental population random sample achieved significantly better success than did the Control population sample. To the degree that these measures represent a good appraisal of skill it might be concluded that pupils taught by the language arts approach are apt to fare better attacking new words in isolation than are children taught exclusively by a basic reader approach.

* * *

The measures used to determine the pupils ability to recognize a word may not merit the title of "test" in the more formal sense. They were not standardized. Even though they were planned with care and used as directed, norms were not available so that pupils might be compared with a standardization population. The tests do, however, provide some measure of a pupil's word recognition ability.

Neither one of the tests reveals how a word recognized at sight has been identified. The pupils were asked to read the words. They were not asked to "sound-them-out" or to tell how they recognized a word. For the words known one can indulge in speculations about how they were known but only by the greatest stretch of imagination. The fact that some words, when phonetically analyzed by certain phoneticians are declared more phonically regular might permit some speculation that such "regular" words either did or did not pose greater difficulty.

No attempt was made to record a pupil's way of attacking a word he didn't recognize at sight. So no analysis can be made of techniques used. Because each list presented only words in isolation it is immediately apparent that the pupils were denied the use of context clues to meaning. It might have been predicted that the children doing wide reading had learned to make much use of context clues and that an isolation test might prove a handicap of a sort. If this did occur then one could only conclude that the language-experience taught children might have achieved better scores even though they were shown to achieve significantly better than the basic reader taught children.

On each of the three measures the significance of the difference favoring the Experimental Group is very high, but especially so for the Fry Phonetically Regular Words and the Karlsen Phonemic Word check. The chapter on procedure shows that word attack skills, phonetic or sound and structural or sight, were taught from the very beginning of the school year. Specifically 20 minutes of each teaching day was to be used for this purpose. The word attack program differed from basic reader programs only in that the words used as a foundation came from the children's dictated stories and not a basic reader list. Subsequent skill development continued to utilize the children's vocabulary and that of the trade books they turned to. Again the word attack program differed from the basic reader program in that the children moved more rapidly up the phonetic-structural analysis skill scale. Vowels and vowel sounds were dealt with early in the fall. It can be concluded then that this type of intensive-extensive word attack skill training based on children's oral language vocabulary will yield highly fruitful results.

Will There Be A Significant Difference In Writing Mechanics, Spelling, And Total Number Of Running Words Between A Random Sample Population Of The Two Treatment Groups On A Measure Of Written Language?

Results show the random sample of the children drawn from the Experimental population achieving significantly better than the Control population sample in a writing sample, in writing mechanics, spelling, and total number of running words. From this it may be concluded that the extensive opportunity to dictate, to write creatively, and to read the writing's of classmates was a more effective way of accomplishing skill in the mechanics of writing, in spelling, and in quantity of word usage than was the use of the basic reader approach.

* * *

This conclusions gives credence to an old adage "you learn that which you practice". The children in the Experimental population were dictating or writing stories through out the entire school year. The amount of dictating and writing varied according to pupil differences as well as teacher differences. Some pupils wrote once a week, most of them wrote a minimum of twice a week, many wrote every day, and some wrote two and three times a day. Apparently this kind of encouragement and opportunity does yield high returns in the facets of the language arts described here.

Children were asked to write and write and write. Teachers were asked to encourage writing, to strongly urge children to spell as best they could, to capitalize, indent, and use punctuation as they saw a need for it. Emphasis was being placed on expressing ideas in writing with little emphasis placed on mechanics. The reason for this was to avoid having the expression of ideas stifled by a pre-occupation with mechanics. Ideas and content and communication or meaning were to represent the pre-occupation. It seems quite clear now that this approach and this way of putting first things first does yield good results not only in quantity of writing but in quality as well.

Children saw their dictated stories as they were typed or written. They saw how paragraphs were indented, how capitals were used, when and where punctuation was inserted. They saw words correctly spelled. When they turned to creative writing, on many occasions they asked the teacher or the typist to prepare a typed copy of the story also. This led to the making of comparisons. Words misspelled in writing would appear correctly spelled in books, and papers and periodicals. Again comparisons were made and the children did this comparing largely on their own. It seems safe to conclude that this is a fruitful teaching practice.

Correct spelling was required by the demands of communication. Pupils discovered from time to time, when they tried to reread a story they had written several weeks before, that they couldn't read some of the words because of the way they were spelled. This realization proved most useful as a stimulator of greater attempts at more accurate spelling. In addition, when children read stories of classmates they frequently discovered that they couldn't read certain words and that this was caused by the spelling. Thus the need for accuracy was learned functionally and apparently this way of learning does yield high returns.

Will There Be A Significant Difference In The Number Of Words Spelled Correctly, In The Different Words Used, In Originality, Interest, And Story Consistency Between A Random Sample Population Of The Two Treatment Groups On A Written Language Measure?

Results show that in each of the areas tested the Experimental population children achieved significantly better than did the Control population children. It can be concluded therefore that the language arts approach will produce better results in the number of different words used and spelled correctly, and in originality, interest and story consistency than will the basic reader approach.

* * *

The implications apparent in the study of different words are quite meaningful. This method of analysis seems to represent a truer measure of ability. To spell many words correctly and to use many different words certainly provides better evidence of language facility than the correct spelling of a few words used over and over again. In spelling the Experimental Group mean is over twice as large as that of the Control Group and the *t* test yields a highly significant difference.

The measures of originality, interest and story organization show the pupils in the Experimental population performing at an unusually high level. Children can think and write about many areas of interest, do so in original ways and produce accounts with good consistency.

Will There Be A Significant Difference In Reading Achievement Between The Two Treatment Groups When Readiness Test Results And Intelligence Test Results Are Held Constant?

Results show the Experimental population achieving significantly better on all measures except on word study skills of the Stanford Achievement Test and on rate of oral reading. When the segregated negro children were excluded the Experimental population again achieved significantly better on each of the five subtests except word study skills. It may be concluded therefore that the language-experience approach yields high returns almost regardless of readiness or capacity.

* * *

The implications of this are clear. When children are compared on the basis of their readiness for reading and their mental capacity the use of the language arts approach produces a significantly better achievement. This could be interpreted to mean that all children at all levels are more apt to achieve successfully in beginning reading if they are taught by the language arts approach.

Will There Be Any Pretest Measures That Will Be The Best Predictors Of Achievement?

Results show that of the pretest measures reported it appears that the test of intelligence provides the best predictive evidence for success in reading, spelling, vocabulary, and arithmetic. The two readiness tests provided significant predictive evidence for the Experimental population and in good part for the boys of the Control population. It may be tentatively concluded then that achievement can be predicted.

* * *

Apparently the abilities measured by the Pintner-Cunningham Test of Mental Ability represents the best global measure of readiness since it had predictive value in arithmetic as well as the language areas. This is what might be expected because of the intent of the test. Apparently, too, even though high correlations exist between intelligence test scores and readiness test scores the two types of tests do measure different abilities.

On the other hand it is interesting to note that two reading readiness tests also represent to a good degree measures of global readiness and predict achievement in areas other than reading. For instance, the test of phonemes and letter names in the Murphy-Durrell Test proved to be as good a predictor of achievement in arithmetic as in reading. Most likely the predictive value in arithmetic is not functionally linked to knowledge of letter-sound or phoneme-grapheme relationships or to letter names. It may be that the significance attached to knowledge of letter names is also overrated in reading. It might be that children able to memorize any 26 names and parrot them in a certain order would display as much readiness for reading.

Needless to say the phoneme-grapheme relationship does appear to serve a reader, particularly a beginning reader, to some purpose when analyzing a word in context not recognized at sight. Of course, knowing phoneme-grapheme relationships and being able to substitute and transpose them in a word or syllable for pronunciation purposes is quite different from knowing the names of the letters. It is the sound that a letter represents which is important.

Why the subtests as listed did not show the same predictive value for the girls in the Control population is an unexplainable phenomenon. The tests were administered in the same manner and under the same supervision. The fact that these differences did occur suggests strongly the need for caution in interpreting results and drawing conclusions.

Will There Be A Significant Difference In Reading Achievement Between The Two Treatment Groups As Influenced By Kindergarten Experience?

Results show a significant difference in favor of the children with 100 days or more of kindergarten experience. In both populations the children with such experience achieved significantly better than did those children with no experience. Apparently, too, kindergarten experience is especially valuable for children who will be taught by the language-experience approach. It can be concluded that kindergarten experience does make a difference in the achievement of children faced with the demands of beginning reading instruction.

* * *

If children are given an opportunity to work and play together, to share and talk with each other, and do so under the direction of a kindergarten teacher the experience is most valuable. The language and experience readiness it provides for reading instruction is worth the effort and expenditure. Schools and parents are wise to insist that kindergarten experience be made available to their children.

Will There Be A Significant Difference In Achievement Between The Two Treatment Groups When The Pupils Are Regrouped Much Like The Terman Classifications Of Intelligence?

It can be concluded that children in the above average and average groups taught by the language-experience approach will consistently achieve better than those taught by the basic reader approach. Only in arithmetic did the basic reader program children perform better.

Among the low average and below 70 I.Q. group the children achieved about equally as well in either approach.

* * *

It is to be noted that the five children in the superior group were not included in the comparisons made between the above average children. If they had been it is possible that the Experimental children would have achieved significantly better than the Control Group in arithmetic as well.

It is possible, too, that if the negro segregated population had been removed from the Experimental population the performance in the low average and below 70 I.Q. group would have been superior to that of the Control population. It could also be speculated that if the language-experience approach had not been used with the segregated negro children the Control population would have shown up significantly better at these two levels.

Will There Be A Significant Difference In Achievement Between The Two Treatment Groups When The Segregated Negro Children Are Removed From The Experimental Population?

It can be concluded that the performance of the segregated negro children was not influenced enough by the language-experience method to avoid having their achievement materially influence the mean achievement scores of the total Experimental population.

* * *

Whether or not the efficiency of the language-experience approach is in question here can not be determined by these findings. Results would need to be compared with a similar group in the Control population or with records of a previous year. Neither one of these conditions can be met.

Close first hand observation by the director of this study and his assistant has led them to conclude that the children involved achieved far better than the results indicate. We make this comment even though we realize that we can be accused of strong bias. Nevertheless, judgments made in good faith have some merit. The children did show much improvement in their ability to dictate. Sentences became longer and more complex as the year went on. Stories were longer and more orderly. Their creative writing showed marked improvement from February to May. The handwriting merited good to excellent rating. Their word files became larger and larger and more functional. They read more and more books, and particularly enjoyed clipping known words from newspapers and periodicals. Teacher comments confirm these reactions.

Strangely enough, however, in arithmetic the total Control population continued to show up better than the selected Experimental population. It could be that arithmetic was taught more effectively in the Control schools or that the teaching in the Experimental population was too preoccupied with the language-experience approach procedure.

Will There Be A Significant Difference In Achievement As Measured By The Stanford Achievement Test When Both Treatment Groups Are Compared With A National Sample?

Both approaches to reading instruction produce achievement records comparable with the average group of the standardization population. It can be concluded that both methods of reading instruction are effective ways of teaching beginning reading as measured by this test.

* * *

To the degree that the Stanford Achievement Test is a valid measure of reading achievement it is apparent that both methods of reading instruction will produce effective results. This is true in spelling and vocabulary development also. It must be kept in mind that the language-experience approach as used in the Experimental population was a modified approach. It too used basic readers for group instruction purposes once the children attained reading facility that allowed them to read at a first reader level.

In arithmetic, though, the total Control population achieved a rating one stanine higher than did the total Experimental population. As stated before this could be interpreted to mean that the method of teaching arithmetic in the Control population was more effective or that the Experimental population teachers were too preoccupied with the teaching of reading.

Will There Be A Significant Difference In Achievement As Measured By The Stanford Achievement Test When The Experimental Population Has Removed From It The Segregated Negro Population And This Group Along With The Control Population Is Compared With A National Sample?

Again it can be concluded that the language-experience approach did not influence sufficiently the achievement of the segregated negro children to avoid having their performance materially influence the mean achievement scores of the total Experimental population. The unsegregated group in the Experimental population showed marked superiority over the total Control population in their comparison with the national sample and it can be concluded that the language-experience approach is a most effective way of teaching reading.

* * *

The fact that the unsegregated Experimental population achieved mean scores that placed them high in the seventh stanine grouping in word reading and paragraph meaning speaks extremely well for the approach. However, again it must be pointed out that both populations achieved mean score ratings that consistently placed them either at the average stanine rating of five or the above average rating of six. Both approaches yield effective results.

Once more the reader is alerted to the fact that in arithmetic both groups achieved well and that this rating places both in the sixth stanine group.

* * *

In general, it may be concluded that the language arts approach to beginning reading instruction is an extremely effective method. It produces excellent results in reading performance, in word attack skills, in spelling, in vocabulary development, in written communication as paced by creative writing, and in handwriting. Furthermore, the technique can be used effectively with all children.

The fact that all the first grade teachers in the Seaford School District participated in this study provides considerably support to the idea that all teachers can learn to use the language arts approach and use it effectively. In the beginning not all the teachers were equally enthused about the use of this approach and about participation in this study. To the degree that this was true the Hawthorne effect was considerably neutralized.

At the end of the year all of the teachers were highly enthused about the language arts approach and were almost evangelistic about their convictions.

Tests are needed that will show more adequately the language skills acquired by means of the language arts approach. The principal test used in this study did not have either the breadth or depth to give a true measure of language achievement. Needed are sound tests of reading attitude, of creative writing, of writing mechanics, of word attack skills on words in context, of critical reading, and of reading tastes.

BIBLIOGRAPHY

BIBLIOGRAPHY

Betts, Emmett A. and Welch, Carolyn M. *Betts Basic Readers.* Third Edition, The Language Arts Series. New York: American Book Company, 1963.

Burrows, Alvina T., Stauffer, Russell G., et al. *American English.* New York: John C. Winston, Division of Holt, Rinehart and Winston, Inc., 1960.

Chall, Jeanne. "Different Approaches to Beginning Reading." *Reading As An Intellectual Activity.* Edited by J. Allen Figurel. Newark, Delaware: The International Reading Association, 1963, pp. 250-254.

Dixon, Wilfred J. and Massey, Frank J., Jr. *Introduction to Statistical Analysis.* Second Edition. New York: McGraw-Hill, 1957.

Kelley, Truman L., et al. *Stanford Achievement Test, Directions for Administering Primary I Battery.* New York: Harcourt, Brace and World, Inc., 1964.

Loban, Walter D. *The Language of Elementary School Children.* Research Report No. 1. Champaign, Illinois: National Council of Teachers of English, 1964.

Russell, David H., et al. The Ginn Basic Readers. Boston: Ginn and Company, 1961.

Stauffer, Russell G. "A Language Experience Approach." *Perspectives in Reading No. 5, First Grade Reading Programs.* Compiled and Edited by James F. Kerfoot. Newark, Delaware: International Reading Association, 1965. pp. 86-117.

Strickland, Ruth G. *The Language of Elementary School Children: Its Relationship to the Language of Reading Textbooks and the Quality of Reading of Selected Children,* Bulletin of the School of Education. Bloomington, Ind.: Indiana University, 1962.

Van Allen, Roach. *A Description of Three Approaches to the Teaching of Reading.* Monograph No. 2. San Diego, California: Department of Education, San Diego County, 1962.

Walker, H. M. and Lev, J. *Statistical Inference.* New York: Henry Holt and Company, 1953.

Yamamoto, Karou. *Experimental Scoring Manual for Minnesota Tests of Creative Thinking and Writing.* Kent, Ohio: Bureau of Education Research, Kent State University, 1964.

APPENDIX A

Correlation Matrices

CORRELATION MATRIX

Experimental N = 232

PRETESTS

POSTTESTS

Stanford Achievement

	Word Reading	Paragraph Meaning	Vocab.	Spell.	Word Study Skills	Arith.
Mental Age (months)	.611	.721	.732	.699	.719	.661
Murphy-Durrell						
Phonemes	.669	.779	.763	.767	.763	.630
Total Letters	.676	.744	.760	.771	.757	.626
Learning Rate	.515	.626	.606	.598	.605	.567
Metropolitan						
Word Meaning	.525	.602	.604	.540	.594	.509
Listening	.465	.543	.615	.528	.573	.462
Matching	.582	.708	.732	.691	.703	.626
Alphabet	.628	.713	.687	.724	.698	.594
Numbers	.613	.705	.762	.706	.733	.601
Copying	.499	.617	.580	.604	.588	.460
Total	.667	.782	.808	.770	.782	.671

CORRELATION MATRIX

Control N = 211

PRETESTS

POSTTESTS

Stanford Achievement

	Word Reading	Paragraph Meaning	Vocab.	Spell.	Word Study Skills	Arith.
Mental Age (months)	.416	.428	.342	.445	.389	.474
Murphy-Durrell						
Phonemes	.386	.330	.292	.245	.294	.268
Total Letters	.326	.427	.358	.482	.368	.339
Learning Rate	.279	.202	.239	.281	.216	.143
Metropolitan						
Word Meaning	.244	.272	.433	.128	.300	.343
Listening	.304	.337	.438	.309	.392	.315
Matching	.353	.312	.400	.339	.317	.343
Alphabet	.476	.400	.412	.443	.388	.348
Numbers	.483	.464	.507	.446	.506	.539
Copying	.335	.320	.434	.380	.293	.440
Total	.500	.471	.548	.464	.488	.515

CORRELATION MATRIX

Boys Experimental N = 119

PRETESTS	POSTTESTS Stanford Achievement Word Reading	Paragraph Meaning	Vocab.	Spell.	Word Study Skills	Arith.
Mental Age (months)	.746	.726	.787	.745	.769	.634
Murphy-Durrell						
Phonemes	.803	.805	.793	.757	.780	.658
Total Letters	.798	.744	.749	.774	.765	.626
Learning Rate	.578	.569	.601	.563	.603	.342
Metropolitan						
Word Meaning	.653	.626	.710	.633	.634	.540
Listening	.562	.535	.623	.530	.569	.487
Matching	.682	.669	.724	.680	.717	.594
Alphabet	.760	.711	.707	.754	.738	.584
Numbers	.724	.684	.759	.731	.768	.666
Copying	.607	.600	.616	.602	.597	.402
Total	.793	.759	.818	.784	.803	.653

CORRELATION MATRIX

Boys Control N = 117

PRETESTS	POSTTESTS Stanford Achievement Word Reading	Paragraph Meaning	Vocab.	Spell.	Word Study Skills	Arith.
Mental Age (months)	.465	.476	.563	.460	.412	.463
Murphy-Durrell						
Phonemes	.386	.365	.346	.246	.322	.234
Total Letters	.592	.486	.364	.494	.426	.356
Learning Rate	.386	.339	.323	.275	.349	.170
Metropolitan						
Word Meaning	.198	.261	.427	.174	.328	.380
Listening	.391	.451	.504	.360	.478	.366
Matching	.437	.397	.478	.337	.374	.295
Alphabet	.569	.476	.440	.462	.492	.342
Numbers	.565	.524	.542	.496	.580	.519
Copying	.437	.349	.515	.408	.380	.419
Total	.581	.538	.623	.500	.575	.503

CORRELATION MATRIX

Girls Experimental N = 113

PRETESTS POSTTESTS

Stanford Achievement

	Word Reading	Paragraph Meaning	Vocab.	Spell.	Word Study Skills	Arith.
Mental Age (months)	.506	.713	.730	.652	.667	.647
Murphy-Durrell						
Phonemes	.525	.744	.707	.726	.700	.597
Total Letters	.577	.795	.750	.737	.744	.640
Learning Rate	.460	.672	.622	.627	.602	.387
Metropolitan						
Word Meaning	.461	.642	.644	.557	.584	.504
Listening	.392	.545	.604	.545	.586	.433
Matching	.499	.745	.752	.698	.684	.451
Alphabet	.517	.710	.675	.681	.665	.599
Numbers	.525	.731	.726	.684	.697	.687
Copying	.401	.625	.541	.591	.550	.478
Total	.544	.811	.800	.760	.734	.680

CORRELATION MATRIX

Girls Control N = 84

PRETESTS POSTTESTS

Stanford Achievement

	Word Reading	Paragraph Meaning	Vocab.	Spell.	Word Study Skills	Arith.
Mental Age (months)	.285	.296	.547	.335	.261	.463
Murphy-Durrell						
Phonemes	.363	.302	.193	.195	.210	.292
Total Letters	.351	.304	.320	.426	.228	.276
Learning Rate	.108	-.021	.160	.294	.014	.100
Metropolitan						
Word Meaning	.364	.339	.482	.107	.322	.332
Listening	.089	.125	.290	.151	.187	.172
Matching	.203	.154	.269	.315	.199	.404
Alphabet	.303	.242	.345	.261	.174	.322
Numbers	.295	.316	.425	.300	.334	.557
Copying	.184	.249	.281	.308	.124	.469
Total	.327	.318	.458	.364	.292	.316

APPENDIX B

Means and Standard Deviations of Pretests and Posttests
for Boys, Girls, and Total Populations of
Experimental and Control Groups

Means and Standard Deviations of Pretest and Posttest Scores for Boys, Girls, and Total Experimental and Control Populations.

	Boys		Girls		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Pintner-Cunningham Mental Age (months)						
Experimental	71.84	14.85	74.94	16.48	73.35	15.74
Control	69.28	11.52	75.96	10.81	72.08	11.70
Murphy-Durrell Phonemes						
Experimental	18.56	14.50	22.83	15.35	20.64	15.07
Control	12.45	8.63	16.12	12.19	13.98	11.53
Murphy-Durrell Total Letters						
Experimental	24.53	15.61	29.34	16.14	26.88	16.05
Control	23.00	13.54	28.13	14.18	25.14	14.04
Murphy-Durrell Learning Rate						
Experimental	7.52	4.63	8.46	5.15	7.98	4.91
Control	7.12	3.80	7.34	3.90	7.21	3.84
Pattern Copying						
Experimental	10.52	7.96	10.80	7.68	10.66	7.83
Control	10.05	6.16	9.76	5.42	9.93	5.86
Identical Forms						
Experimental	10.88	6.61	12.74	7.49	11.79	7.11
Control	16.18	10.16	21.04	9.85	18.55	10.41
Metropolitan Word Meaning						
Experimental	6.29	3.48	7.44	3.25	7.08	3.40
Control	7.69	2.68	7.18	2.62	7.48	2.67

	Boys		Girls		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
			Metropolitan Listening			
Experimental	8.46	3.25	8.50	2.88	8.48	3.08
Control	7.98	2.80	8.55	2.14	8.22	2.56
			Metropolitan Matching			
Experimental	5.72	4.26	6.56	4.42	6.12	4.26
Control	5.60	3.52	6.28	3.65	5.93	3.60
			Metropolitan Alphabet			
Experimental	7.95	5.08	9.15	5.02	8.53	5.08
Control	6.72	4.23	8.61	4.48	7.52	4.47
			Metropolitan Numbers			
Experimental	11.17	5.76	11.79	5.61	11.47	5.68
Control	10.62	4.82	11.81	3.95	11.12	4.53
			Metropolitan Copying			
Experimental	6.56	4.33	7.56	3.78	7.04	4.10
Control	6.70	3.89	7.23	3.30	6.93	3.70
			Metropolitan Total			
Experimental	48.21	22.25	50.56	20.59	49.33	21.60
Control	45.32	17.25	49.81	15.30	47.19	16.63
			San Diego Attitude Inventory			
Experimental	18.27	4.16	19.14	4.75	18.69	4.48
Control	18.92	3.44	19.26	2.98	19.06	3.26

	Boys		Girls		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
			Stanford Word Reading			
Experimental	18.07	8.82	20.12	11.13	19.07	10.08
Control	13.20	6.73	16.80	5.73	15.00	6.40
			Stanford Paragraph Meaning			
Experimental	17.33	11.29	20.00	10.05	19.17	11.23
Control	13.02	7.32	16.04	6.32	15.03	7.11
			Stanford Vocabulary			
Experimental	19.46	8.23	19.31	7.39	19.40	7.83
Control	17.04	6.30	19.32	5.74	18.33	6.12
			Stanford Spelling			
Experimental	9.60	7.11	12.19	6.78	11.04	7.07
Control	7.08	6.12	10.16	6.03	8.80	5.74
			Stanford Word Study Skills			
Experimental	33.06	13.08	34.34	12.60	33.22	12.81
Control	31.08	12.80	36.18	9.82	33.76	10.60
			Stanford Arithmetic			
Experimental	29.67	18.76	32.33	17.40	31.07	18.02
Control	34.01	17.30	38.02	14.14	36.30	16.10

	Experimental		Control	
	Mean	S.D.	Mean	S.D.
Gilmore Oral Reading Accuracy	21.37	13.44	16.40	8.36
Gilmore Oral Reading Rate	31.23	27.02	12.57	10.44
Fry Phonetically Regular Words	10.40	9.70	2.26	1.62

	Experimental		Control	
	Mean	S.D.	Mean	S.D.
Gates Word Recognition Test	16.43	9.95	9.71	6.23
Karlsen Word Recognition Test	16.57	11.02	6.34	4.39
Writing Mechanics	12.42	77.26	52.71	33.61
Total Words Spelled Correctly	35.71	32.46	19.80	13.69
Total Number Running Words	42.80	38.27	22.37	15.36
Total Number Different Words	18.20	12.20	11.40	7.77
Originality Score	1.19	.58	.71	.31
Interest Score	2.23	1.46	1.02	.79
Consistency (Organization) Score	2.66	1.64	1.16	.83

APPENDIX C

Analysis of Covariance

ANALYSIS OF COVARIANCE

The model being fitted for each of the dependent variables is the following:

$$Y = m + b_1 Z_1 + b_2 Z_2 + c_1(\alpha_1 - \alpha_2) + c_2(\beta_1 - \beta_2)$$
$$+ c_3(\delta_1 - \delta_2 - \delta_3 + \delta_4)$$

where $\alpha_1 = 1,\ \alpha_2 = 0$ if school no. ≤ 13 (experimental)

$\alpha_1 = 0,\ \alpha_2 = 1$ if school no. > 13 (control)

$\beta_1 = 1,\ \beta_2 = 0$ for a boy

$\beta_1 = 0,\ \beta_2 = 1$ for a girl

$\delta_1 = \alpha_1 \beta_1$

$\delta_2 = \alpha_1 \beta_2$

$\delta_3 = \alpha_2 \beta_1$

$\delta_4 = \alpha_2 \beta_2$

A regression run was made for each dependent variable in which the sums of squares accounted for by the following terms were determined: first the mean plus covariates only, then the added contributions from school effect, sex effect, and interaction, in that order. An analysis of variance was made, non-significant terms were eliminated, and where necessary further regression runs were made with the non-significant terms left out of the model. The results of this analysis are summarised below.

For all schools

Dependent Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Y_1	m,b_1,b_2	148633	3	-	-
(Word Reading)	Treatment	420	1	420.	9.80
	Error	18389	429	42.86	-
	Total	167442	433	-	-
Y_2	m,b_1,b_2	155497	3	-	-
(Paragraph	Treatment	377	1	377.	8.48
Meaning)	Error	19083	429	44.48	-
	Total	174957	433	-	-
Y_3	m,b_1,b_2	170200	3	-	-
(Vocabulary)	Sex	128	1	128.	5.51
	Error	9955	429	23.21	-
	Total	180283	433	-	-
Y_4	m,b_1,b_2	52077	3	-	-
(Spelling)	Treatment	109	1	109.	5.03
	Sex	81	1	81.	3.74
	Error	9266	428	21.65	-
	Total	61533	433	-	-
Y_5	m,b_1,b_2	543026	3	-	-
(Word Study	Error	35016	430	81.43	-
Skills)	Total	578042	433	-	-

With segregated school omitted

Dependent Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Y_1	m,b_1,b_2	140606	3	-	-
(Word Reading)	Treatment	377	1	377.	13.64
	Error	10418	377	27.63	-
	Total	151401	381	-	-
Y_2	m,b_1,b_2	149380	3	-	-
(Paragraph	Treatment	304	1	304.	7.00
Meaning)	Error	16368	377	43.41	-
	Total	166052	381	-	-
Y_3	m,b_1,b_2	163443	3	-	-
(Vocabulary)	Treatment	56	1	56.	2.50
	Sex	97	1	97.	4.33
	Error	8423	376	22.40	-
	Total	172019	381	-	-

With segregated school omitted - Continued

Dependent Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Y_4 (Spelling)	m,b_1,b_2	50403	3	-	-
	Treatment	58	1	58.	2.60
	Sex	79	1	79.	3.54
	Error	8395	376	22.33	-
	Total	58935	381	-	-
Y_5 (Word Study Skills)	m,b_1,b_2	514892	3	-	-
	Error	28946	378	76.58	-
	Total	543898	381	-	-

Random sample

Dependent Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Y_1 (Gilmore Accuracy)	m,b_1,b_2	30386	3	-	-
	Treatment	801	1	801.	12.32
	Error	4095	63	65.	-
	Total	35282	67	-	-
Y_2 (Gilmore Rate)	m,b_1,b_2	206345	3	-	-
	Error	21054	64	328.97	-
	Total	227399	67	-	-
Y_3 (Fry Word Recognition)	m,b_1,b_2	4603	3	-	-
	Treatment	1309	1	1309.	41.09
	Error	2007	63	31.86	-
	Total	7919	67	-	-
Y_4 (Gates Word Recognition)	m,b_1,b_2	12168	3	-	-
	Treatment	529	1	529.	16.82
	Error	1982	63	31.46	-
	Total	14679	67	-	-
Y_5 (Karlsen Word Recognition)	m,b_1,b_2	11753	3	-	-
	Treatment	2318	1	2318.	49.34
	Interaction	214	1	214.	4.55
	Error	2913	62	46.98	-
	Total	17198	67	-	-
Y_6 (Writing Mechanics)	m,b_1,b_2	353921	3	-	-
	Treatment	26594	1	26594.	3.24
	Error	516590	63	8199.84	-
	Total	897105	67	-	-

Random sample - Continued

Dependent Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Y_7	m,b_1,b_2	57775	3	-	-
(Words Spelled	Treatment	3986	1	3986.	7.02
Correctly)	Error	35756	63	567.56	-
	Total	97517	67	-	-
Y_8	m,b_1,b_2	77021	3	-	-
(Total Running	Treatment	6880	1	6880.	8.26
Words)	Error	52496	63	833.27	-
	Total	136397	67	-	-
Y_9	m,b_1,b_2	15937	3	-	-
(Different Words	Treatment	642	1	642.	7.44
Spelled	Error	5435	63	86.27	-
Correctly)	Total	22014	67	-	-

APPENDIX D

Tabulated Wrong Responses of a
Random Sample Population on the
San Diego Reading Attitude Inventory

AN INVENTORY OF READING ATTITUDE

Yes No 1. Do you like to read before you go to bed?

Yes No 2. Do you think that you are a poor reader?

Yes No 3. Are you interested in what other people read?

Yes No 4. Do you like to read when your mother and dad are reading?

Yes No 5. Is reading your favorite subject at school?

Yes No 6. If you could do anything you wanted to do, would reading be one of the things you would choose to do?

Yes No 7. Do you think that you are a good reader for your age?

Yes No 8. Do you like to read catalogues?

Yes No 9. Do you think that most things are more fun than reading?

Yes No 10. Do you like to read aloud for other children at school?

Yes No 11. Do you think reading recipes is fun?

Yes No 12. Do you like to tell stories?

Yes No 13. Do you like to read the newspaper?

Yes No 14. Do you like to read all kinds of books at school?

Yes No 15. Do you like to answer questions about things you have read?

Yes No 16. Do you think it is a waste of time to make rhymes with words?

Yes No 17. Do you like to talk about books you have read?

Yes No 18. Does reading make you feel good?

Yes No 19. Do you feel that reading time is the best part of the school day?

Yes No 20. Do you find it hard to write about what you have read?

Yes No 21. Would you like to have more books to read?

Yes No 22. Do you like to read hard books?

Yes No 23. Do you think that there are many beautiful words in poems?

Yes No 24. Do you like to act out stories that you have read in books?

Yes No 25. Do you like to take reading tests?

Supt. of Schools, Dept. of Educ.
San Diego County 2-61

Tabulated Wrong Responses of a
Random Sample Population on the
San Diego Reading Attitude Inventory

Experimental N = 33

Control N = 39

Question	Experimental	Control	Question	Experimental	Control
1.	3	9	14.	0	2
2.	4	9	15.	8	6
3.	7	17	16.	10	12
4.	9	13	17.	6	5
5.	4	3	18.	1	3
6.	5	5	19.	0	8
7.	3	5	20.	8	13
8.	14	15	21.	4	5
9.	8	15	22.	17	22
10.	14	9	23.	4	3
11.	17	7	24.	4	7
12.	4	8	25.	2	4
13.	8	17	Total	164	222
			Mean	4.97	5.69

APPENDIX E

Lists of Tests Used in Study and Copies of Individually Administered Word Recognition Tests, and Instructions for Obtaining the Creative Writing Sample

PRETESTS

Metropolitan Readiness Tests, Form A, 1964 Revised, by Hildreth, Griffith, and McGaurran. Harcourt, Brace and World, Inc., New York.

Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition, by Murphy and Durrell. Harcourt, Brace and World, Inc., New York.

The Pintner-Cunningham Test of Mental Ability, Form A, 1964 Revised, by Pintner, Cunningham, and Durost. Harcourt, Brace and World, Inc., New York.

Detroit Word Recognition Test, Form B, 1925, 1953 Renewed, by E. F. Oglesby. Harcourt, Brace and World, Inc., New York.

* Identical Forms, 1956, by Thurstone and Jeffrey, University of North Carolina.

* Pattern Copying, by Thelma G. Thurstone, University of North Carolina.

POSTTESTS

Stanford Achievement Test, Primary I, Form X, 1964, by Kelley, Madden, Gardner, and Rudman. Harcourt, Brace and World, Inc., New York.

Gilmore Oral Reading Test, Form A, 1951, by John A. Gilmore. Harcourt, Brace and World, Inc., New York.

Phonetically Regular Words Oral Reading Test, by Edward Fry, Rutgers University.

Gates Word Pronunciation Test, by Arthur I. Gates.

Karlsen Phonemic Word Test, by Bijorn Karlsen, University of Minnesota.

An Inventory of Reading Attitude, Superintendent of Schools, Department of Education, San Diego County.

Grade One Written Language Measure, United States Office of Education, Cooperative Research Project.

---

* Special Permission granted by Thelma G. Thurstone for experimental use only in connection with the "First Grade Reading Study" sponsored by the Cooperative Research Branch of the United States Office of Education.

POSTTESTS - Continued

Organization Scale, in Scoring Manual for Evaluating Imaginative Stories, by E. Paul Torrance, Bureau of Educational Research, University of Minnesota.

Supplementary Scoring Guide for the Evaluation of Originality and Interest, by E. Paul Torrance, Bureau of Educational Research, University of Minnesota.

PHONETICALLY REGULAR WORDS ORAL READING TEST

Child's Name________________________Date______________________

School____________Room_____________Code Number________

Examiner______________Number of words read correctly___

1. nap
2. pen
3. hid
4. job
5. rug
6. shade
7. drive
8. joke
9. mule
10. plain
11. hay
12. keen
13. least
14. loan
15. show
16. walk
17. haul
18. jaw
19. soil
20. joy
21. frown
22. trout
23. term
24. curl
25. birch
26. rare
27. star
28. porch
29. smooth
30. shook

Directions: Have pupil read words from one copy while examiner makes another copy. Do not give pupil a second chance but accept immediate self-correction. Let every student try the whole first column. If he gets two words correct from word number six on, let him try the whole second column.

KARLSEN PHONEMIC WORD TEST

EXAMINER'S COPY

DIRECTIONS: 1. Hand the PUPIL'S COPY to the pupil.
2. Say: "Read these words out loud."
3. Note the pupil's errors on *this* sheet.
4. Do not give the pupil a second chance, but accept immediate self-correction.
5. Continue until the child misses 5 consecutive words.
6. The score is the number of words pronounced correctly.

---

1. fit
2. tap
3. rod
4. get
5. would
6. mother
7. down
8. age
9. think
10. long
11. kind
12. yard
13. foot
14. gold
15. freeze
16. chair
17. mouth
18. carry
19. hope
20. beat
21. loaf
22. cowboy
23. furniture
24. page
25. push
26. huge
27. snowball
28. thirteen
29. scare
30. sunshine
31. gymnasium
32. join
33. usual
34. zone
35. teaspoon
36. monument
37. senior
38. flute
39. behave
40. faucet

Child's name: ______________________________ Test date ___ ___ ___

Examiner: ______________________________ Birth date ___ ___ ___

Age: ______

GATES WORD PRONUNCIATION TEST

EXAMINER'S COPY

DIRECTIONS: Have the child read the words out loud. Tell him you would like him to read some words for you. If he fails the first time, ask him to try the word again. Continue until ten consecutive words have been missed. As the words become difficult, special care should be taken to encourage the child. The score is one point for each word correctly pronounced on the first trial, one-half point for each word correctly pronounced on the second trial. (Note: 9½ correct would be scored as 10.)

---

1. so
2. we
3. as
4. go
5. the
6. not
7. how
8. may
9. king
10. here
11. grow
12. late
13. every
14. about
15. paper
16. blind
17. window
18. family
19. perhaps
20. plaster
21. passenger
22. wander
23. interest
24. chocolate
25. dispute
26. portion
27. conductor
28. brightness
29. intelligent
30. construct
31. position
32. profitable
33. irregular
34. schoolmaster
35. lamentation
36. community
37. satisfactory
38. illustrious
39. superstition
40. affectionate

Child's name: ______________________ Test date ___ ___ ___

Examiner: ______________________ Birth date ___ ___ ___

Age: ______

First Grade Written Language Measures
USOE Cooperative Research Project

Directions to the Classroom Teacher

General Information

You are being asked to obtain two writing samples from each pupil in your classroom. We wish to emphasize the necessity of following the directions and procedures exactly.

As you realize, many other teachers throughout the nation will also be asked to obtain writing samples from their pupils. It is necessary, therefore, that these samples be obtained in all classrooms at approximately the same time and by following the same directions.

You are requested to obtain the first writing sample(Restricted Stimulus Measure) on ______________________________.
(Project Director Specifies Date)

The second writing sample (Unique Stimulus Measure) should be obtained on ______________________________.
(Project Director Specifies Date)

DIRECTIONS --- RESTRICTED STIMULUS MEASURE

Classroom Situation

No attempt should be made to enrich your normal room display through the use of word lists, pictures, dictionaries, etc. The classroom conditions should approximate those normally found in your daily writing activities.

Materials

The writing paper and pencils customarily used in your classroom should be used in obtaining this sample.

Identification

The pupil's name, teacher's name, and the school should be indicated on each pupil's paper. In some cases, you might initial the back of each paper, or a code number may be assigned by your Project Director.

Teacher Directions to the Pupils

You are requested to spend a minimum amount of time motivating the class to write a story. This motivation should consist of:

1. General encouragement to the whole class that you are interested in reading their stories and that they are to use their very best handwriting.
2. Additional encouragement to individual pupils by such directions as:

> "I'm sure you have an interesting story you would like to write for me today, Billy."
>
> "Sally, I'll bet you have a really good story you would like to write for me."
>
> "I liked that story you wrote for me last week, Mary. I'm sure you could write another one for me. Let's try."

This additional motivation should be of a general type and should be directed toward getting the pupils to write rather than in providing them with specific ideas.

It is particularly cautioned that no specific titles be presented, nor should pictures or other stimuli be employed.

Other Procedures

No spelling help should be provided during the writing period.

If pupils request spelling assistance, they should be told to try to spell the word and then encouraged to proceed.

If pupils normally use a simplified dictionary or write from displayed flashcards or use a speller, such practices may be allowed.

Under no circumstances, however, should you correct misspellings, give ideas, or assist the pupil beyond the point of general encouragement.

Time Limit

Following the reading of the paper, twenty minutes should be allowed for the pupils to finish their stories. Papers of pupils who finish early should be inconspicuously collected and a coloring exercise or similar silent activity should be provided for the remainder of the twenty minutes.

Written Sample Identification

At the end of twenty minutes, all stories should be collected, packaged, and clearly labeled:

RESTRICTED STIMULUS SAMPLES (Date________________)

You are not to correct these stories; they will be corrected and scored by the Project Director's Staff who will apprise you of the correction procedures should you desire this information.

CORRECTION PROCEDURES

MECHANICS RATIO SCALE:

It is suggested that the papers be corrected by three staff members. Corrections should be made for:

Capitalization - Red (ball point) circles should be drawn around all possible capitalizations.

- If the pupil has capitalized correctly, a red diagonal line should be drawn through the circle.
- The mechanics-ratio score for capitalization will be the number correct over the number possible.
- Score: - 1 point for each correct capital in the title.
    - 1 point for each correct capital at the beginning of a sentence.
    - 1 point for each correct capitalization of a proper name.
    - 1 point for each correct capitalization of a day or month.
    - 1 point for each correctly capitalized "I."

Punctuation - Blue (ball point) circles should be drawn around all possible punctuations.

- If the pupils has punctuated correctly, a blue diagonal line should be drawn through the circle.
- The mechanics-ratio score for punctuation will be the number correct over the number possible.
- Score: - 1 point for each correct (.) period.
    - 1 point for each correct (?) question mark.
    - 1 point for each correct (!) exclamation mark.
    - 1 point for each correct (" ") set of quotation marks.
    - 1 point for each correct (,) comma in a direct quote.

Indentation - Green (ball point) circles should be drawn around the first word of all possible indentations.

- If the pupil has indented correctly, a green diagonal line should be drawn through the circle.

- Score: - 1 point for each correctly indented paragraph.

TOTAL MECHANICS-RATIO SCORE

The total mechanics-ratio score should be recorded as per cent: (6/12 = 50%, 25/32 = 70%). The obtained per cent of mechanics accuracy should be recorded on Card 2 in the columns which will be specified by the Coordinating Center.

Spelling - Tally the number of spelling errors to the right of each line.

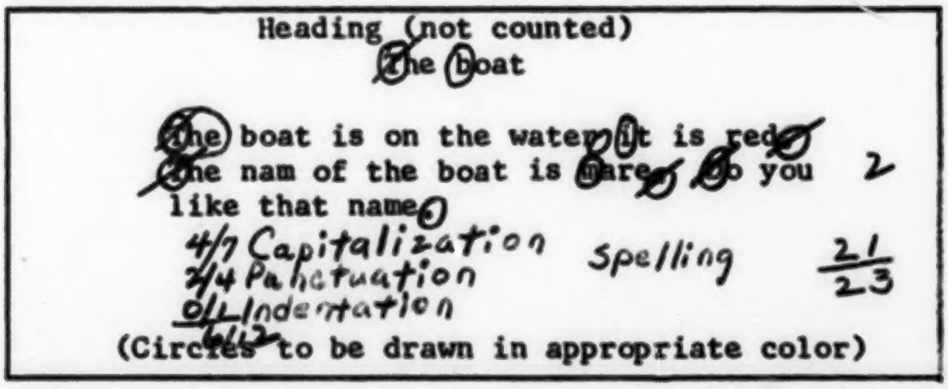
- A word incorrectly capitalized should be recorded as a spelling error.
- Subtract the number of errors from the total number of running words.
- Score as number of words spelled correctly over total number of running words.

TOTAL SPELLING-RUNNING WORD COUNT

The total number of words correctly spelled should be recorded on Card 2 in those columns which will be specified by the Coordinating Center.

The total number of running words should be recorded on Card 2 in those columns which will be specified by the Coordinating Center.

Sample:



Heading (not counted)
the boat

the boat is on the water it is red
the nam of the boat is mare do you 2
like that name
4/7 Capitalization Spelling 21/23
2/4 Punctuation
0/1 Indentation
6/12
(Circles to be drawn in appropriate color)

APPENDIX F

Schools and School Personnel Cooperating in the Investigation and University of Delaware Graduate Students Majoring in Reading

The following schools and school personnel participated in one or more phases of the investigation.

Special words of gratitude are needed to express appreciation for their cooperation. Each rendered a tremendous service to us and even greater service to the children who have been helped and who may be helped in the future.

SEAFORD SPECIAL SCHOOL DISTRICT

Kenneth C. Madden - Superintendent
John W. Royal - Administrative Assistant
Mary Phillips - District Reading Consultant
Mary Ennis - Typist and Teacher Aid

Central Elementary School
Marion Pepper - Principal
Shirley Garland - Secretary
Muriel Harding
Loretta McWilliams
Eliza Newman
Katherine Williams

West Seaford Elementary School
Peter Mollahan - Principal
Mary Mohan - Secretary
Natalie Cunningham
Patricia Derrickson
Norma Smarte
Ruth VanTine

Frederick Douglass School
Robert Thomas - Principal
Vivian White - Secretary
Gertrude Johnson
Beatrice Wiltbank

HARRINGTON SPECIAL SCHOOL DISTRICT

Albert Adams - Superintendent

Harrington Elementary School
Solomon Markowitz - Principal
Margaret Homewood - Secretary
Ruth Grant
Grace Howard
E. M. Hynson
Amanda Quillen
Clara West

GEORGETOWN SPECIAL SCHOOL DISTRICT

George Keene - Superintendent

Georgetown Elementary School
  William Bant - Principal
    Virginia Pepper - Secretary
    Mary Ann Culver
    Kay Eckstorm
    Marguerite Hudson
    Aimee Marvel
    Bessie Veasey

The following graduate students at the University of Delaware majoring in reading participated in certain phases of this investigation.

Daniel J. Converse
Ronald L. Cramer
Vivian Henderhan
Marianne Lackman
Mary Meier
Dorothy Nave
Eleanor Roberts
Mary Ann Rozas
Isabel Russell
Marian Sawin
Lois Swain